

RESEARCH AREA & SOURCE	DESCRIPTION & MAIN FINDINGS / ARGUMENTS
<p>Instructional Strategies</p> <p><i>Review of Educational Research</i> Vol. 64, No. 2, pp. 253 - 286</p>	<p>Semb, G. & Ellis, J. (1994) Knowledge taught in school: What is remembered?</p> <p>In this article, the authors reviewed 56 articles (many of which related to multiple studies) on knowledge retention. The examined retention based on three types of task: recognition tasks; recall tasks; and cognitive skill tasks.</p> <p>Main Findings:</p> <ul style="list-style-type: none"> • Overall the studies showed better retention for recognition tasks over recall tasks and there was no clear pattern for cognitive skills tasks. • In a study spanning 50 years, Bahrlick (1984) found that factual knowledge for Spanish learned in school declined dramatically while grammatical knowledge was maintained in a relatively permanent state. • A number of researchers have speculated that “the degree of coherence or inherent organization of the content strongly influences forgetting.”(p. 269). This is backed up by studies which show better retention for concepts than for knowledge items. • Studies where practice and review were manipulated during the retention interval suggest that review or re-learning at an interval after the initial learning boosts long-term retention over learning on a single occasion. • Instructional strategies which required learners to actively interact with and process content led consistently to higher levels of long-term retention in the studies reviewed. This is the ONLY variation in instructional strategies among all those reviewed that produced higher retention. • (One example study was by Specht and Sandlin, 1991. In this study, students in an undergraduate accounting course were taught using either traditional lectures or through role playing. There was no different between the groups on the end-of-course test, but after a six week retention interval the role playing group showed no loss for concept recognition and minimal loss for problem solving (around 13%). The lecture group demonstrated losses of 18% for concepts and 54% for problem solving.) • The authors hypothesize that these kinds of strategies facilitate qualitative changes in the knowledge schematas of the students - ie the students had made meaning from the content and developed understanding beyond simple memorization.
<p>Instructional Strategies – ESL</p> <p><i>Review of Educational</i></p>	<p>Janzen, J. (2008) Teaching English language learners in the content areas</p> <p>The author reviews multiple articles related to teaching English language learners within mainstream content classes in the areas of: History, Math, English and Science. Some articles reviewed are empirical studies, some are analyses of the language needs of text within the 4 subject areas and some are articles with recommendations for teachers which may or may not be based on empirical studies.</p> <p>Main Findings / Arguments:</p> <p>History</p>

- History texts are characterized by high lexical density (the number of content words per clause) and extensive nominalization and these features make unique demands on the reader.
- Nussbaum (2002) found that the use of graphic organizers to scaffold the writing of historical arguments led to students writing more complete arguments.
- Reppen (1995) found that explicit modeling and teaching of the structure and language features of specific genres (narrative, description, argument and discussion) led to positive change in student content knowledge and writing proficiency. There was also a positive impact on attitudes to social studies learning.
- Short(2002) found that in sheltered social studies classes for ELLs, teachers were more likely to discuss content and task than language, a finding she considered problematic.
- Studies based on Systemic Functional Linguistics seem to present the most compelling perspective on teaching language within the content area.
- Many sources recommend teaching techniques designed to foster active processing of content such as: using guiding questions, brainstorming, using graphic organizers, group work. Many also recommend the use of the students' first language to help with content processing where appropriate.

Math

- The language of Math is characterized by technical vocabulary including specialized meanings for words, complex noun phrases, use of more than one semiotic system.
- Math language is used to express concepts that are often not necessary or important in everyday usage and so ELLs' exposure to them may be limited to the classroom
- Researchers stress techniques that will assist students in connecting everyday language with the language of math.
- Lager (2006) investigated the linguistic challenges of algebra problems and found that some of the words which cause difficulty were not this generally considered to be part of the language of math.
- Gutierrez (2002) found that teachers who were successful at getting their students to take higher math classes shared some characteristics. They; (1) were careful observers of students; (2) were able to identify students needs and backgrounds without relying on stereotypes; (3) didn't require the students to speak English at all times; (4) had the students work in cooperative groups and ; (5) gave students opportunities to explore ideas through discussion
- Khisty (1991) found that in math classrooms with a significant portion of ELLs, teachers used little actual mathematical terminology, focused most of the lessons on procedures for problem-solving, did not allow for the kind of discussion that would allow students to grasp mathematical concepts, and presented material that was largely decontextualized.
- Many sources recommend that teachers: (1)give students opportunities to talk their way through problems and verbally explain

their reasoning (2) use students' knowledge or interests to make connections to the math curriculum; (3) use a variety of grouping practices and (4) make sure assessments clearly distinguish between knowledge of math and knowledge of language.

English

- Carlo et al. (2004) found that explicit teaching of vocabulary in the context of a thematic unit improved both vocabulary knowledge and reading comprehension.
- Jimenez & Gamez (1996) found that when taught how to deal with unfamiliar vocabulary students developed a higher level of awareness of their cognitive behavior and a more positive attitude towards reading.
- Wright (1997) found that when taught several strategies including inferencing, previewing and guessing the meaning of unknown words, students improve their reading comprehension levels and became more confident readers.
- Saunders and Goldenberg (1999) found that the use of literature logs (where students record written responses to text) and instructional conversations (structured not to transmit knowledge but to support learners in arriving at complex understandings) were beneficial for ELLs.

Science

- Macken-Horarik (2002) found that working explicitly with the structure and language features of the explanation genre helped learners not only in the language side of Science, but also in developing students' scientific understanding of the content.
- Numerous authors recommend explicit teaching of the way in which texts are constructed to convey the meanings of Science.
- Lee and Fradd (1996) investigated classroom discourse patterns on various cultural groups and found that the style of English speakers was most compatible with the discourses of Science.
- Moje, Collazo, Carrillo & Marx (2001) found that the curriculum provided to teachers in the schools they studied focused on questions typical of the science classroom rather than those of actual scientists. They further found competing discourses in the science classrooms, such as an assessment task where students were asked to imagine what would happen if a factory opened in their neighborhood, leading students to produce creative texts that were not connected to the discourses of science.
- Researchers stress the importance of providing ELLs with opportunities to "do" science rather than simply to learn inert facts.
- Dong (2002), in a year-long case study of three biology teachers. Three common traits that proved beneficial to ELLs were: (1) high standards; (2) an approach to teaching ELLs that emphasized elaboration of concepts rather than simplification; and (3) attentiveness to student backgrounds and experience.
- Hampton & Rodriguez (2001) found that use of inquiry-based methods where students were involved in asking questions, gathering data and considering evidence increased students skills in both language and science knowledge.

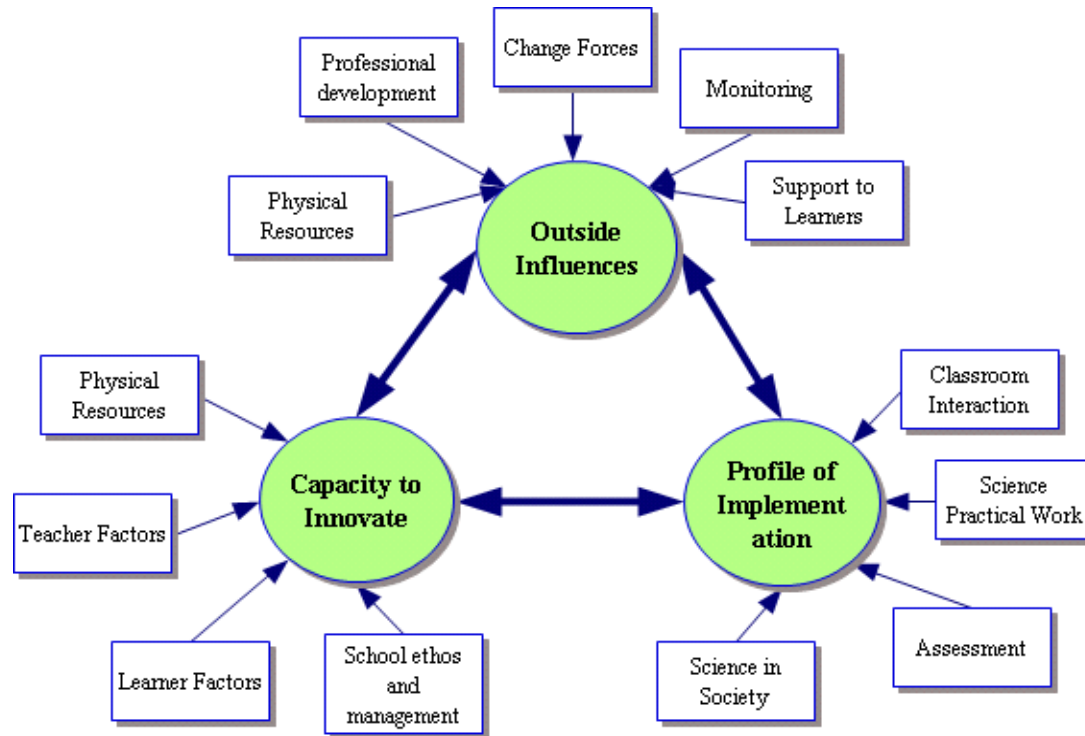
General Conclusions

- The following themes stand out: (1) language is central in content teaching and in order for ELLs to succeed they need to be

	<p>taught the features of genre and language use typical of discourses within a discipline; (2) opportunities to articulate thinking, share ideas in groups and think through new ideas verbally extend student understanding (the language of interaction does not always have to be English); (3) teachers need extended time for professional development related to the language of their discipline, how they can integrate language and content, and cultural diversity : (4) cultural discourses affect academic success and must be acknowledge and valued in teaching, though there is little agreement on how best to achieve this.</p>
<p>Professional Development</p> <p><i>Journal of Educational for Students Placed at Risk (JESPAR) Vol. 14, pp. 45 - 71</i></p>	<p>Quick, H., Holtzman, D., Chaney, K. (2009) Professional development and instructional practice: Conceptions and evidence of effectiveness</p> <p>This study examined two years of continuous professional development activities in the San Diego school district. The researchers asked three questions: (1) What does research say about effective professional development? (2) What did teachers in the school identify as effective features of PD and were these consistent with the research? (3) What features of PD were associated with effective instructional practices (in this case the use of activities related to higher-level meaning of text in literacy instruction)?</p> <p>Main Findings:</p> <p>Effective PD from research:</p> <p>The research-based Eisenhower model suggests that effective professional development has three core features:</p> <ol style="list-style-type: none"> 1. <i>A focus on content / subject-area curriculum</i> 2. <i>Active learning</i> (including such things as observations, collaborative planning, reviewing student work, meaningful discussion, practice, reflection, trying out ideas) 3. <i>Coherence</i> - connections with larger goals and connects between PD activities over time. <p>In addition to the core features, the model also has these structural features:</p> <ol style="list-style-type: none"> 1. <i>Collective participation</i> of groups of teachers from the same school / grade level 2. <i>Form of the activity</i> – activities set within the school context such as joint planning, coaching, mentoring and in-school study groups are referred to as <i>reform</i> type activities are are more likely to provide opportunities for active learning and coherence than external workshops or courses. 3. <i>Duration of the activity</i> – extended periods of time are recommended to allow for discussion and active learning <p>Teacher perceptions of effective PD:</p> <p>Teachers in the San Diego reform project identified five characteristics as being fundamental to their conception of effective PD:</p> <ol style="list-style-type: none"> 1. Provides time for collaboration within grade levels or across grade levels 2. Provides opportunities for modeling, practice and feedback 3. Is based on the needs of teachers 4. Is provided in a safe, trusting environment

	<p>5. Is connected to broader school goals and to other professional learning opportunities</p> <p>These connected fairly loosely with the characteristics included in the Eisenhower model</p> <p>Features of PD associated with effective instruction</p> <p>The following features were found to correlate strongly with the use of activities related to higher-level meaning in classroom literacy instruction:</p> <ol style="list-style-type: none"> 1. A focus on content / curriculum 2. Participation in coaching / mentoring 3. Amount of time spent doing PD activities 4. Coherence of PD activities (this correlation only appeared in the second year of the study suggesting that coherence among PD experiences may emerge as an important factor over time) <p>A negative correlation was found for PD activities focused on pedagogy and a marginal correlation was found for time spent in collaborative planning.</p>
<p>Leadership / Professional Development</p> <p><i>Journal of Education for Students Placed at Risk Vol 14, pp. 72 - 96</i></p>	<p>Graczewski, C., Knudson, J., Holtzman, D. (2009) Instructional leadership in practice: What does it look like, and what influence does it have?</p> <p>This piece of research examined the relationship between leadership and coherence and relevance of professional development in a literacy school reform effort in the San Diego school system. The following four aspects of instructional leadership were investigated: (1) coherence of school-wide vision for instructional improvement; (2) focus on student learning and achievement; (3) follow-up / implementation support; and (4) leadership engagement in instructional improvement. The study drew on previous research suggesting that effective professional development should be relevant and coherent and should focus directly on content and curriculum. The effect of leadership on these two aspects of professional development was investigated.</p> <p>Main Findings:</p> <ul style="list-style-type: none"> • All four leadership aspects correlated positively with “relevance and coherence of professional development, but of the four, coherent school-wide vision was by far the strongest predictor and was the only one that was statistically significant. • The above finding from surveys across the district was confirmed in case studies of 9 schools. At schools where the principal was able to foster a coherent vision, there was a greater likelihood that professional development was coherent and relevant. <p>(The following were considered to be indicators of a coherent vision: “(a) The principal is able to articulate clear goals and strategies for the improvement of instruction and student achievement; (b) goals are understood and supported by the majority of the school’s teachers; and (c) the various goals and strategies for professional development and instruction are consistent with each other”. The following were considered to be indicators of the relevance and coherence of professional development: “(a) consistent with the school’s goals to improve teaching and learning; (b) consistent with or complementary to other professional learning opportunities; and</p>

	<p>(c) consistent with teacher's goals for professional learning.”)</p> <ul style="list-style-type: none"> • All of the leadership aspects correlated with a focus on content and curriculum but the direct engagement of the leadership team in professional development activities was by far the strongest predictor and the only one that was statistically significant. • Once again the survey correlations were confirmed in the 9 case study schools. <p>(The following were considered to be indicators of leadership engagement in professional development: “(a) the extent to which the principal visited classrooms; (b) the extent to which the principal provided resources and support for professional development; and (c) the extent to which the principal understood the learning needs of teachers”. The following were considered to be indicators of a content and curriculum focus for professional development: professional development for which the main goals were to (a) strengthen teachers' content knowledge; (b) develop grade-level standards; (c) articulate curriculum within or across grades; and (d) improve monitoring of student progress”)</p> <p>Obstacles which could hinder site-based instructional leadership</p> <p>The following were identified as potential obstacles:</p> <ul style="list-style-type: none"> ➤ Principal capacity ➤ Competing demands for a principal's time ➤ Top down models of instructional leadership ➤ Personal relationships
<p>Curriculum Implementation</p> <p><i>Journal of Research in Science Teaching</i> Vol. 42, No. 3, pp. 313 - 336</p>	<p>Rogan, J. & Aldous, C. (2005) Relationships between the constructs of a theory of curriculum implementation.</p> <p>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.</p> <p>The framework:</p>



Main Findings:

- Classroom observations and teacher interviews suggest a tendency for teachers to retain old practices but attach new jargon to them.
- 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.
- The area of 'outside influences' which requires the most attention is professional development
- 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.
- The level of 'science practical work' in the profile of implementation was only influenced by one of the capacity factors - school ethos and management.
- Professional development had a much greater influence on 'science practical work' than it did on classroom interaction.
- 'Science in society' was not influenced by any of the subconstructs in capacity or outside influence.
- 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'.

	<ul style="list-style-type: none">• 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.• 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.• 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.• 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”