

Teacher Knowledge and Teaching Reading

P. David Pearson

UC Berkeley

www.scienceandliteracy.org

Look for posting at this website in a few days

Almost did not make it

- I am about to enter a new stage of life...
- The grandfather stage

What's the difference between primary, secondary, and college teachers?

- Their kids
- Their subject matter
- Themselves

So why would a group of academics invite a dean?

- Three crises
- Budget Crunch
- Blame it on your predecessor!
- Overenrollment in Elementary Program
- Convene a Task Force
- Threatened Faculty Secession
- Go out and buy three envelopes

My agenda

- Present my evolving version of a developmental view of teacher knowledge
- Raise some nagging issues about assessing teacher knowledge
- Talk about some successful models and principles of teacher education, particularly professional development
 - Models that promote the development of professional knowledge
- Along the way, dispel some myths that have been promoted by those who think that teacher education IS the problem in American Education

Why should we worry about teacher knowledge?

- The moral imperative: It is the solemn responsibility of any profession to monitor the professional knowledge of its members
 - It is precisely the “deal” professions make with our society
- The empirical claim: It matters. It makes a difference in teacher practice and student achievement.
 - Teachers who know more teach better and their kids learn more.
- The counterfactual: Maybe it doesn't???
- We'll examine these issues in more detail.

What would it mean to privilege and monitor teacher knowledge?

What would we monitor? What would we assess?

- Declarative: What?
- Procedural: How?
- Conditional: Why and when?
- All three: Why, when, and how do we teach what?

What would it mean to have a theory of teacher knowledge development over time?

- What is it that develops?
- How does it change over time?
- How would you know it was changing?
- What difference would it make whether and if it changed?

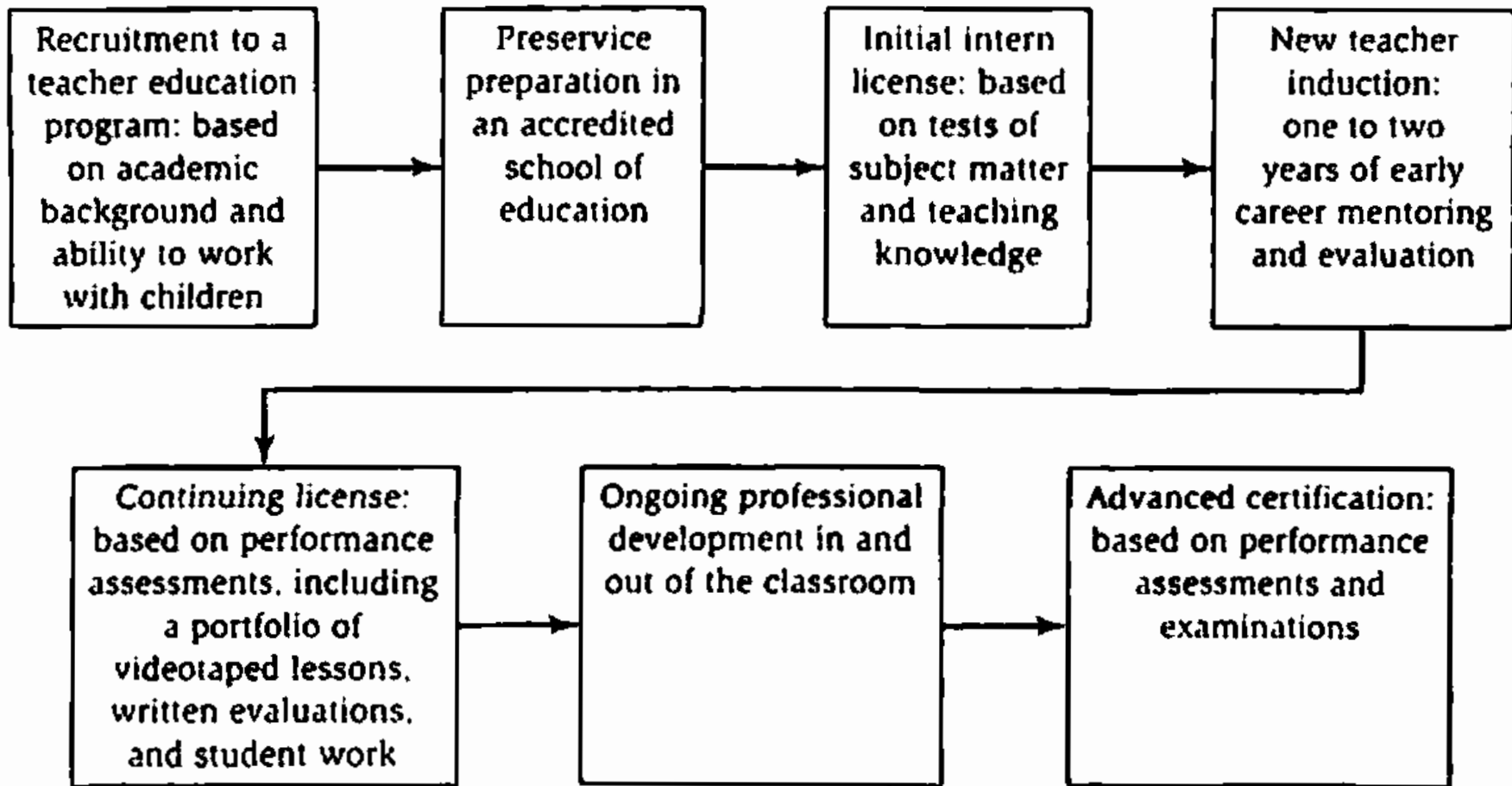


Figure 6.1. A Continuum of Professional Development

Source: Adapted from a document prepared jointly by the National Council for Accreditation of Teacher Education, the Interstate New Teacher Assessment and Support Consortium, and the National Board for Professional Teaching Standards by removing their labels for the various tests and standards.

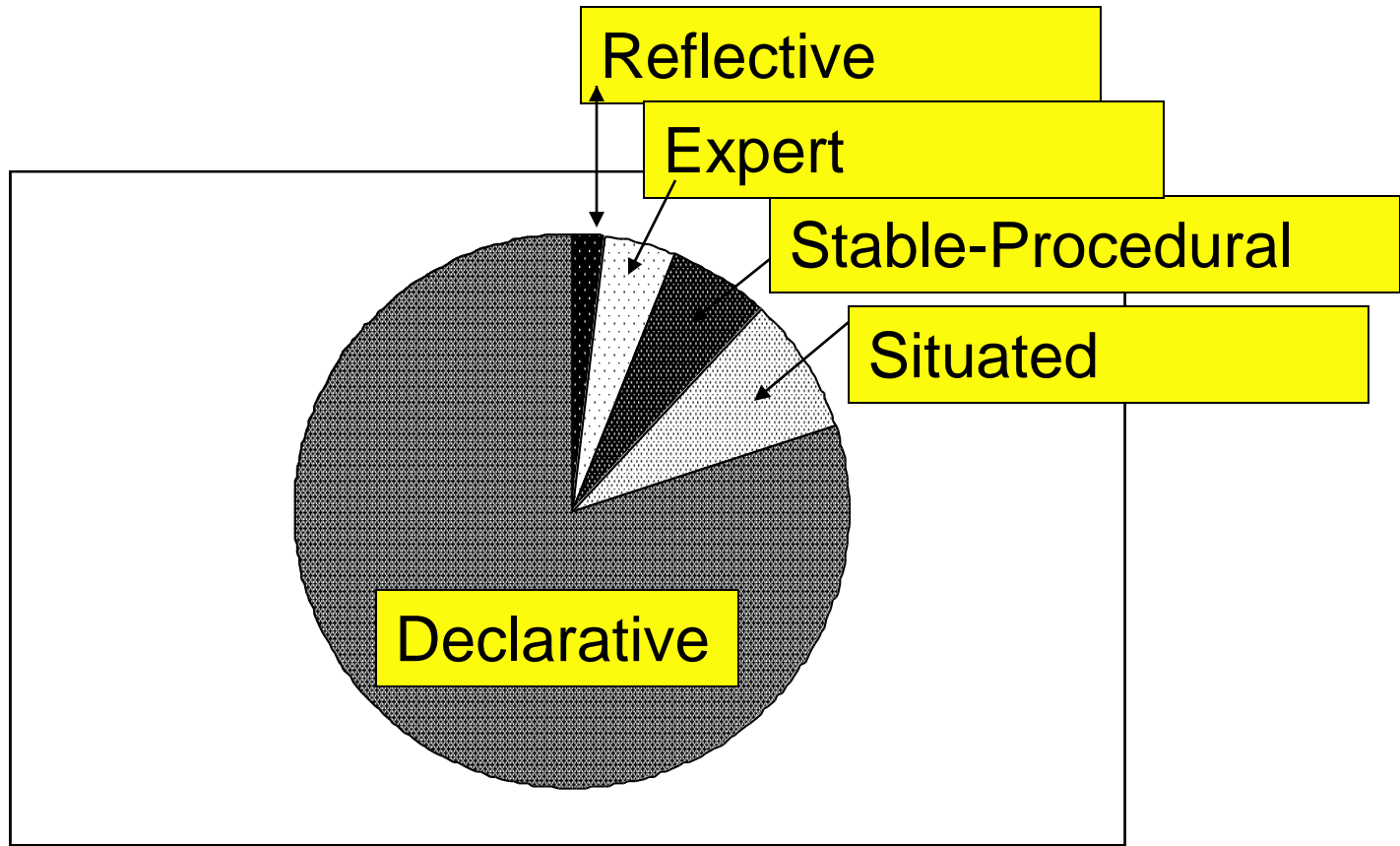
Official accounts tend to emphasize procedures and stages

National Academy of Education

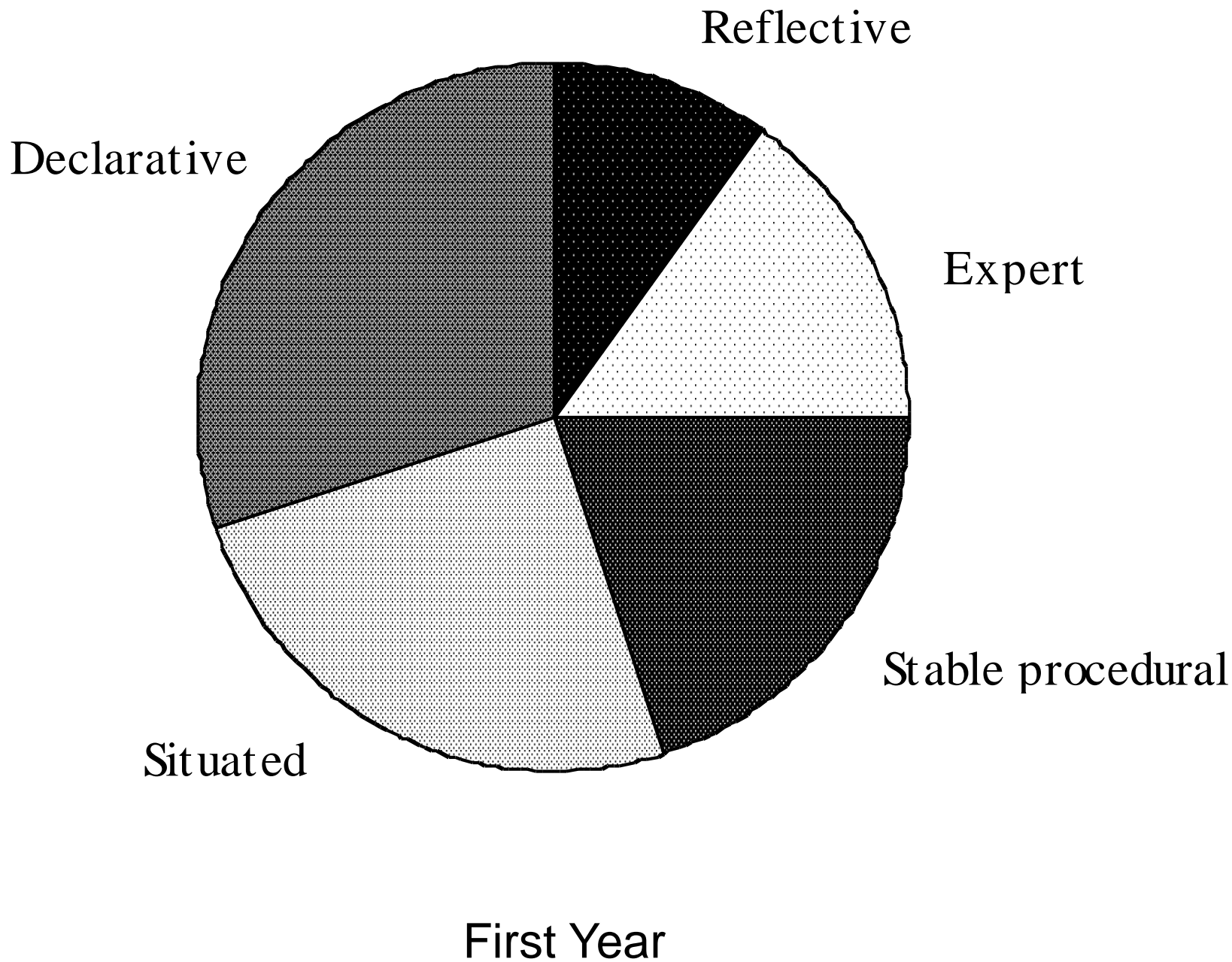
- The Knowledge Base for Teaching Reading, Snow et al
- *Chapter 6: A model of professional growth in reading education, Pearson & Cervetti*

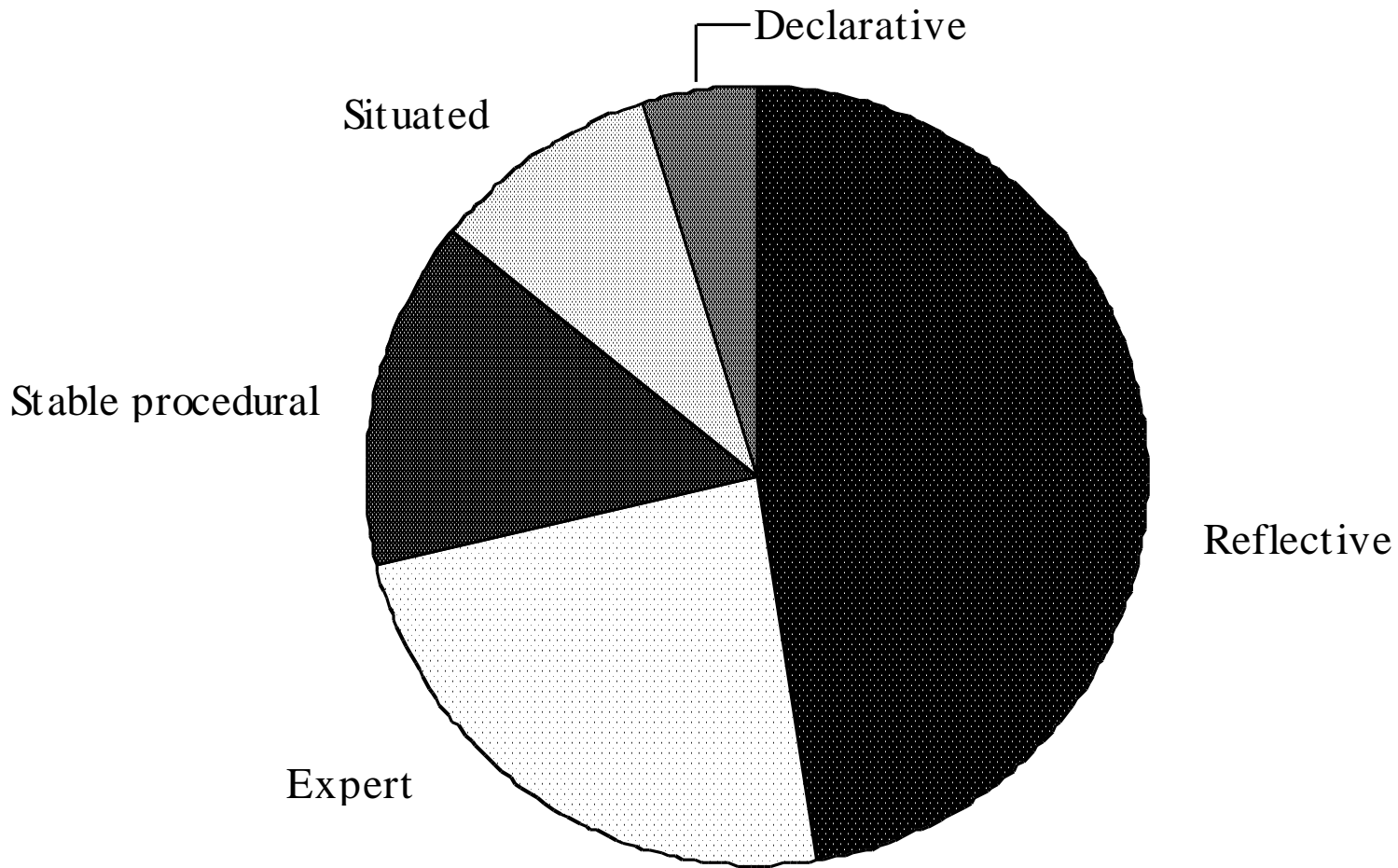
Snow's Continuum of Knowledge

- **Declarative knowledge.**
 - **knowing what**
- **Situated, can-do procedural knowledge.**
 - **knowing how but highly strategic in application**
- **Stable procedural knowledge.**
 - **Knowing how but routinized, almost automated**
- **Expert, adaptive knowledge.**
 - **Knowing how, why, when, with whom, and under what conditions**
- **Reflective, organized, analyzed knowledge.**
 - **Knowing it all, where the pot holes are, what needs fixing, what keeps you up at night.**



Distribution of Knowledge in a Traditional Pre-service Program





Experienced, Expert Teacher

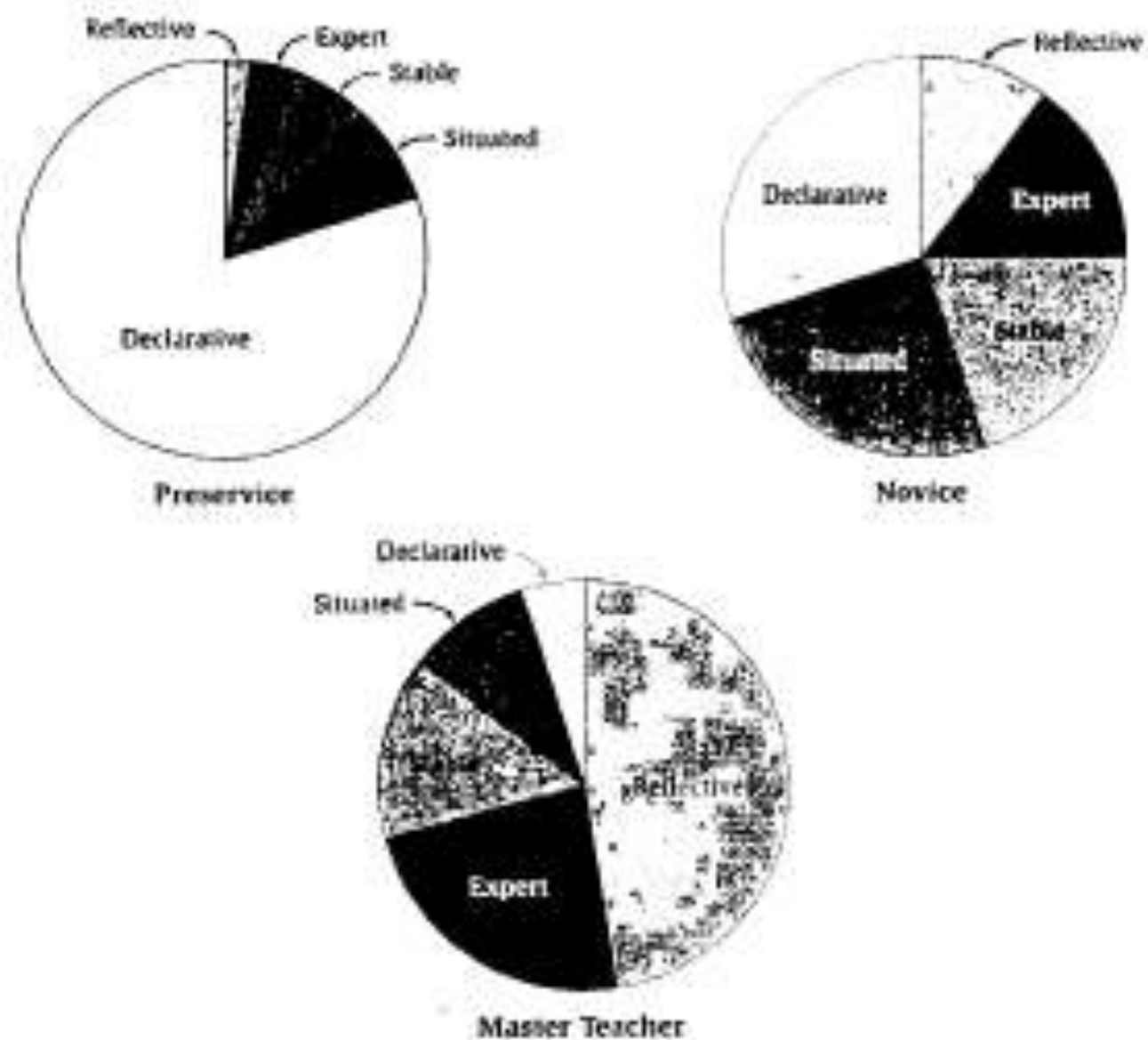
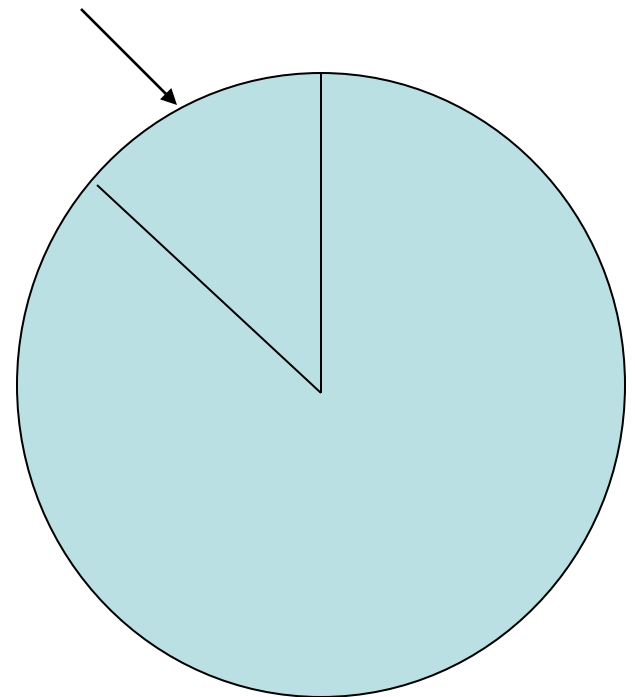
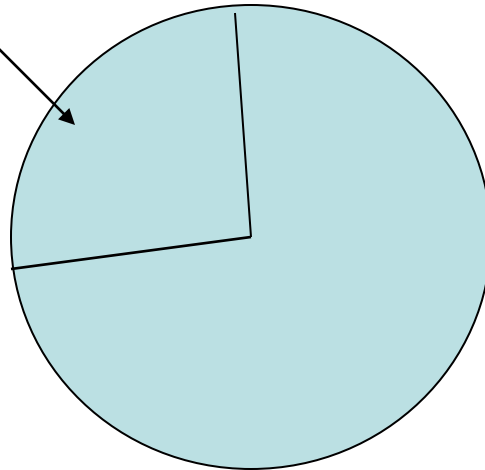
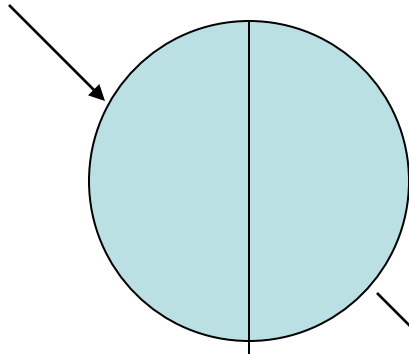


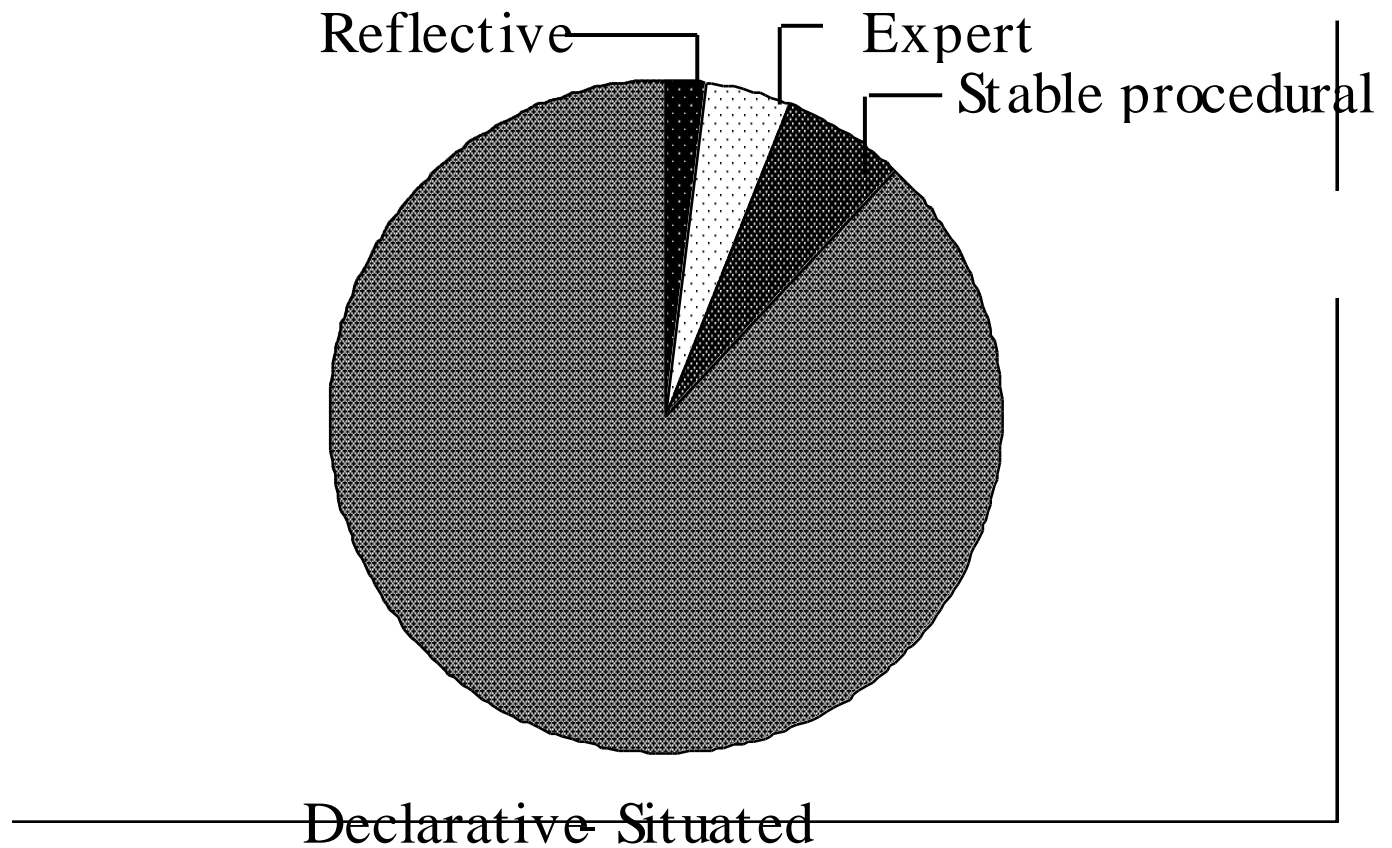
Figure 6.2. Knowledge Representation at Three Points of a Teacher's Career

The pie should get bigger over time, no matter how the types of knowledge are distributed.

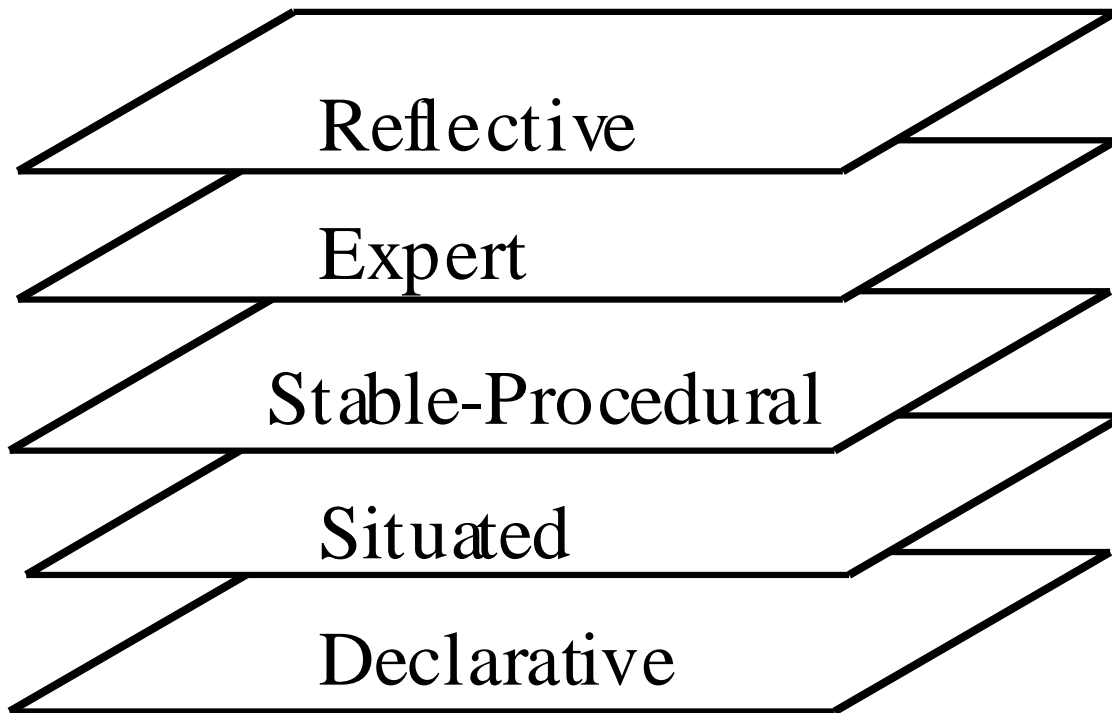


So, for example, your declarative knowledge is “bigger” in the third pie than the first, but it just takes up a smaller piece of the pie.

Preservice



Teacher knowledge varies as a function of program emphases, even at the novice level



There are dependencies among knowledge types. Probably layered as in archeological digs.

Table 6.1: Changes in teacher knowledge across a career pathway: phonemic awareness	
Type of Knowledge	What Phonemic Awareness knowledge might look like?
Declarative knowledge	Teachers would know that a phoneme is a basic unit of sound, that it is different from a syllable, and that in English the match to graphemes is uneven. They would know that phonemic awareness is a sub-category of phonological awareness, and that the capacity to blend phonemes together to make words and to segment words into constituent phonemes is a key understanding for kids to possess early on.
Situated, can-do procedural knowledge	Teachers would possess at least a few routines for assessing phonemic awareness (e.g., blending, segmentation, elision) and a few routines for engaging kids in its application (e.g., rhyming games, elision tasks, alliteration tasks). As teachers implement the routines, they would likely consult guidelines or manual regularly. The lessons (or assessment protocols) would appear to be relatively rigid and pre-packaged as they are enacted. Teachers would require expert support from a mentor to make adaptations.
Stable procedural knowledge	At this level, the routines have become more fluid and they are beginning to be able to adapt them to different groups and individual students. They are beginning to understand the importance of phonemic awareness in reading and are able to use it to help students learn to read. They are beginning to understand the importance of phonemic awareness in reading and are able to use it to help students learn to read.
Expert Action Knowledge	Teachers have a deep understanding of phonemic awareness and are able to use it to help students learn to read. They are able to adapt their routines to different groups and individual students. They are able to use their knowledge to help students learn to read.
Reflective analyzed knowledge	Teachers have a deep understanding of phonemic awareness and are able to use it to help students learn to read. They are able to adapt their routines to different groups and individual students. They are able to use their knowledge to help students learn to read. They might well be involved in a district-wide committee to develop a professional development program for improving PA instruction.

Phonemic Awareness

How knowledge changes in a domain

Declarative

- Teachers would know that a phoneme is a basic unit of sound, that it is different from a syllable, and that in English the match to graphemes is uneven.
- They would know that phonemic awareness is a sub-category of phonological awareness,
- and that the capacity to blend phonemes together to make words and to segment words into constituent phonemes is a key understanding for kids to possess early on.

Situated Can Do Knowledge

- Teachers would possess at least a few routines for assessing phonemic awareness (e.g., blending, segmentation, elision) and a few routines for engaging kids in its application (e.g., rhyming games, elision tasks, alliteration tasks).
- As teachers implement the routines, they might still consult guidelines or a manual regularly.
- The lessons (or assessment protocols) would appear to be relatively rigid and pre-packaged as they are enacted.
- Teachers would require expert scaffolding from a mentor to make adaptations.

Stable Procedural Knowledge

- At this level, the routines have become more or less automatic for the teachers, and they are beginning to be able to adapt to the performance needs of different groups and individuals.
- The repertoire of routines for teaching different aspects of phonemic awareness (e.g., blending, segmentation, elision) have expanded and some differentiation....
- The teacher sees connections between steps in the PA program adopted by the school and the kinds of PA performance exhibited by students when they are asked to spell words “the way they sound” during writing time.

Expert Adaptive Knowledge

- Teachers at this level have come to see the strengths and weaknesses of different PA programs (both formal and informal).
- They know which programs fit the needs of different sorts of students.
- They can reconcile conflicting results from different approaches to PA assessment.
- They can conduct staff development sessions on how to administer PA tests and how to teach PA in different ways.

Reflective, Organized, Analyzed Knowledge

- When teachers possess reflective, organized, and analyzed knowledge, they can examine PA programs and assessments critically, with an eye toward predicting which programs are likely to be successful with different populations of students.
- They might well be involved in a district-wide committee to develop a professional development program for improving PA instruction.

Table 6.2: Changes in teacher knowledge across a career pathway: pragmatics

Type of Knowledge	What knowledge about the pragmatic dimensions of language might look like?
Declarative knowledge	<p>Teachers at this level understand the fundamental form-function relationship in language use that writers and speakers use the formal tools and features of text to fulfill different functions and achieve different goals (i.e., to inform, to persuade, to entertain).</p> <p>They have a passing acquaintanceship with key terms related to pragmatics such as discourse, register, genre, textual devices and conventions, voice, style, persona, stance, perspective but their knowledge is not well-developed or differentiated.</p> <p>They understand the social and cultural functions that texts perform in different contexts (school, work, play, home) and ways in which those contexts shape textual use and interpretation.</p>
Situated, can-do procedural knowledge	<p>Teachers possess at least a few routines for addressing these features of language use, such as Questioning the Author, and teach students about how to use genre and register to achieve particular effects on an audience (e.g., persuasion or entertainment). These lessons would be fairly prescribed and circumscribed--the understandings about text developed therein may or may not be applied to reading and writing activities in other classroom contexts.</p> <p>Teachers may be more skilled at teaching students the meaning of terms, such as genre, voice, and perspective than helping student to apply these understandings to their reading and writing of texts.</p>
Stable procedural knowledge	<p>At this level, the routines have become more or less automatic for the teachers, and they are beginning to be able to adapt to the performance needs of different groups and individuals. Teachers have acquired additional routines for developing students' understandings of the pragmatic dimensions of texts and are beginning to develop approaches for assessing students' understandings of these dimensions.</p> <p>Teachers are beginning to differentiate, as is instruction. They are beginning to understand the form/function relationship, may understand the connotative loading of features, and are beginning to understand the ways that societal</p>
Reflective, organized, analyzed knowledge	<p>Teachers at this level have refined their routines and are better able to integrate pragmatics into students' daily interactions with text.</p> <p>Teachers own understanding of these issues and their application to reading and writing has become more sophisticated. Whereas in the declarative stage, teachers understood the meaning of terms such as discourse, register and genre, they are now able to connect these stylistic variations to the pragmatic/social (and political or ideological) functions of text.</p> <p>Teachers at this level can anticipate and respond to obstacles that their students will confront in applying these understandings to their interpretation and composition of texts.</p>
Reflective, organized, analyzed knowledge	<p>At this level, teachers can use their understandings about the pragmatic dimensions of text proactively and in larger contexts. They can evaluate the effectiveness of programs, routines, and activities designed to develop students' understandings about the pragmatic dimensions of text and their ability to apply these understandings to their reading and writing.</p> <p>These teachers may be involved in developing new approaches to teaching pragmatics</p>

Pragmatics

Declarative

- Teachers at this level understand the fundamental form-function relationship in language use—that writers and speakers use the formal tools and features of text to fulfill different functions and achieve different goals (i.e., to inform, to persuade, to entertain).
- They have a passing acquaintanceship with key terms related to pragmatics—such as discourse, register, genre, textual devices and conventions, voice, style, persona, stance, perspective—but their knowledge is not well-developed or differentiated.
- They understand the social and cultural functions that texts perform in different contexts (school, work, play, home) and ways in which those contexts shape textual use and interpretation.

Situated Can Do Knowledge

- Teachers possess at least a few routines for addressing these features of language use, such as Questioning the Author, and teach students about how to use genre and register to achieve particular effects on an audience (e.g., persuasion or entertainment). These lessons would be fairly prescribed and circumscribed--the understandings about text developed therein may or may not be applied to reading and writing activities in other classroom contexts.
- Teachers may be more skilled at teaching students the meaning of terms, such as genre, voice, and perspective than helping student to apply these understandings to their reading and writing of texts.

Stable Procedural Knowledge

- At this level, the routines have become more or less automatic for the teachers, and they are beginning to be able to adapt to the performance needs of different groups and individuals. Teachers have acquired additional routines for developing students' understandings of the pragmatic dimensions of text and are beginning to develop approaches for assessing these understandings.
- The teacher's knowledge is becoming increasingly differentiated, as is instruction. Instruction may include more explicit attention to the form/function relationship, may include analysis of more subtle stylistic features (e.g., the connotative loading of words and idioms), and may include increasing attention to the ways that societal forces shape authors and texts

Expert Adaptive Knowledge

- At this level, teachers are less reliant on specific routines and are better able to integrate issues of discourse and pragmatics into students' daily interactions with texts.
- The teachers own understanding of these issues and their application to reading and writing has become more sophisticated. Whereas in the declarative stage, teachers understood the meaning of terms such as discourse, register and genre, they are now able to connect these stylistic variations to the pragmatic/social (and political or ideological) functions of text.
- Teachers at this level can anticipate and respond to obstacles that their students will confront in applying these understandings to their interpretation and composition of texts.

Reflective Organized Analyzed Knowledge

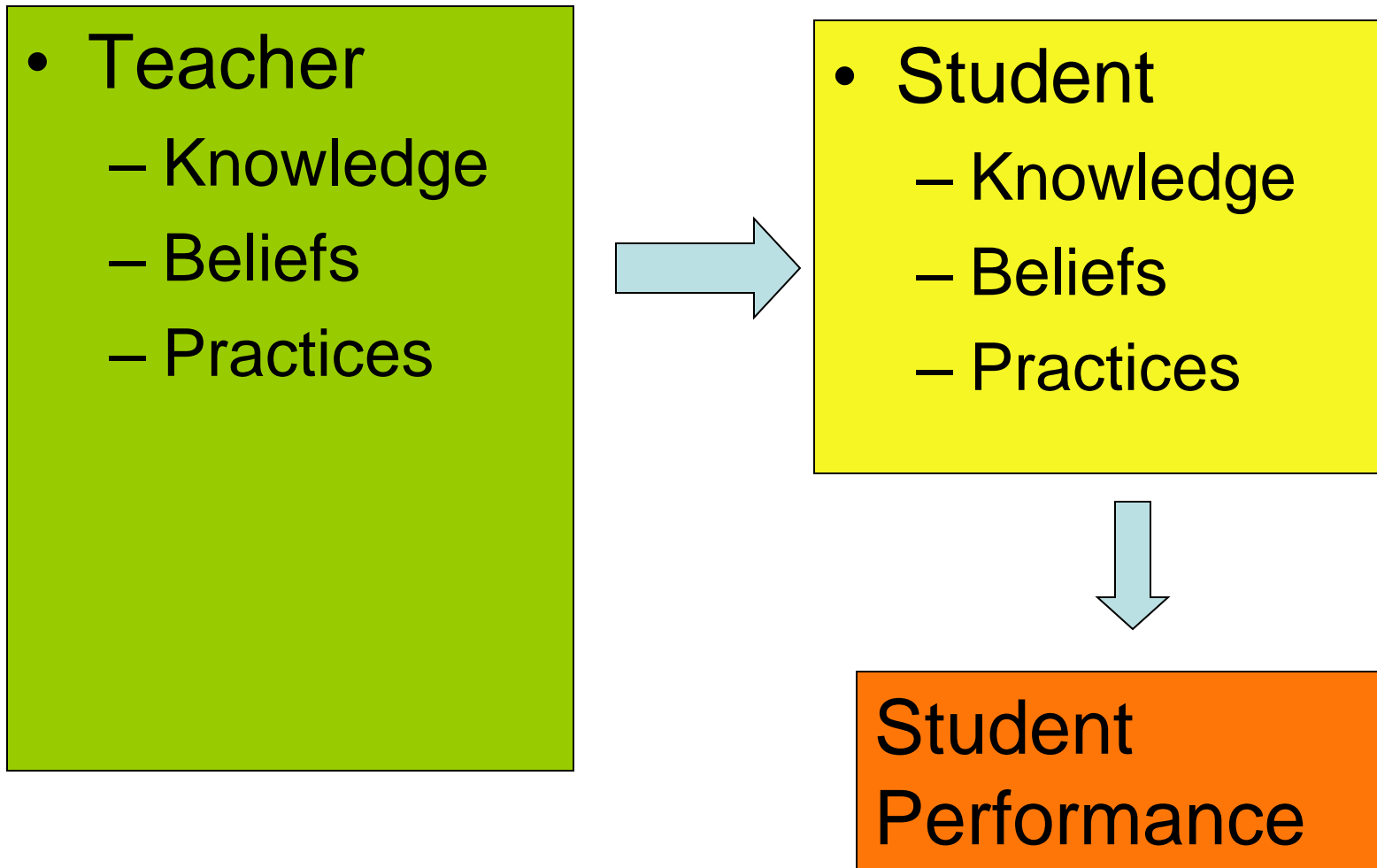
- At this level, teachers can use their understandings about the pragmatic dimensions of text proactively and in larger contexts.
- They can evaluate the effectiveness of programs, routines, and activities designed to develop students' understandings about the pragmatic dimensions of text and their ability to apply these understandings to their reading and writing.
- These teachers may be involved in developing new approaches to teaching pragmatics at the school or district level.

What areas would we apply this to?

- Language
- Literacy (orthography, visual images, layout)
- Learning (including individual differences, diversity, and exceptionality)
- The intersection of the first three
- The context of schooling

Another missing piece?

Do we have a theory of how and why knowledge works its magic on student performance?



How would we measure it?

- Test
 - Multiple choice
 - Essay
- Observation
 - Live
 - Video
- Defense/reflection of practice
 - Portfolio with reflections
 - Critique the work of others or themselves

Perhaps we need to match assessments to knowledge type

	Test it	Observe it	Defend it
Declarative	√	?	
Situated	?+	√	
Stable		√	?
Expert	?-	?+	√
Reflective	?-	?+	√

How would we validate any of the measures of teacher knowledge we selected?

- Criterion-related validity
 - Score predicts future success (predictive validity)
 - Score correlates with some external standard of teacher knowledge (concurrent validity)
- Content validity
 - It looks and feels like what we say we are measuring (face validity)
 - Experts have it (or more of it) but novices don't (or have less of it)
 - Reutzell et al Utah group
 - Phelps et al Michigan

More on validation

- Consequential validity: What happens when teachers either possess it or don't
 - Do they teach better (different set of practices)?
 - Do kids learn more?
 - This is the scary part!!!!

But...

- We'll never know unless we get better at
 - Measuring teacher knowledge
 - Measuring teacher beliefs
 - Measuring teacher practices
- And actually do it as a matter of course
- We need to build the expectation in our profession that assessing our knowledge, beliefs and practices is a
 - Good thing: helps us grow
 - A serious professional responsibility

And now for something completely different

- Let's take a hard look at the policy context in which we work and ask some tough questions and face some tough facts

Beware the simple view

- Read Comp = Dec * List Comp
- Subject Matter Knowledge + Verbal Ability = Effective Teaching
 - 2003 Report of Secretary of Education
- My view
- It's subject matter, stupid
- It's experience, stupid
- It's professional knowledge, stupid
- It's all three stupid, plus a genuine commitment.

The impact of reading on other subject matter pedagogy

- **The evolution of mathematics story problems during the last 40 years.**

1960's

- **A peasant sells a bag of potatoes for \$10. His costs amount to $\frac{4}{5}$ of his selling price. What is his profit?**

1970's (New Math)

- A farmer exchanges a set P of potatoes with a set M of money.
- The cardinality of the set M is equal to \$10 and each element of M is worth \$1. Draw 10 big dots representing the elements of M .
- The set C of production costs is comprised of 2 big dots less than the set M .
- Represent C as a subset of M and give the answer to the question: What is the cardinality of the set of profits? (Draw everything in red).

1980's

- **A farmer sells a bag of potatoes for \$10. His production costs are \$8 and his profit is \$2. Underline the word "potatoes" and discuss with your classmates.**

1990's

- **A kapitalist pigg undjustlee akires \$2 on a sak of patatos. Analiz this tekst and sertch for erors in speling, contens, grandmar and ponctuassion, and than ekspress your vioos regardeng this metid of geting ritch.**
- **Author unknown**

2000's

- **Dan was a man.**
- **Dan had a sack.**
- **The sack was tan.**
- **The sack had spuds**
- **The spuds cost 8.**
- **Dan got 10 for the tan sack of spuds.**
- **How much can Dan the man have?**

Beware the Market Place View

- Fordham Foundation: Checker Finn
- Marketplace vision: Let a thousand markets bloom (California experiment)
- Invite all comers, weed out the chaff
- Use student performance as the sole criterion for retaining teachers and schools
- Change metaphors for teaching preparation
 - Not the doctor, but the journalist!

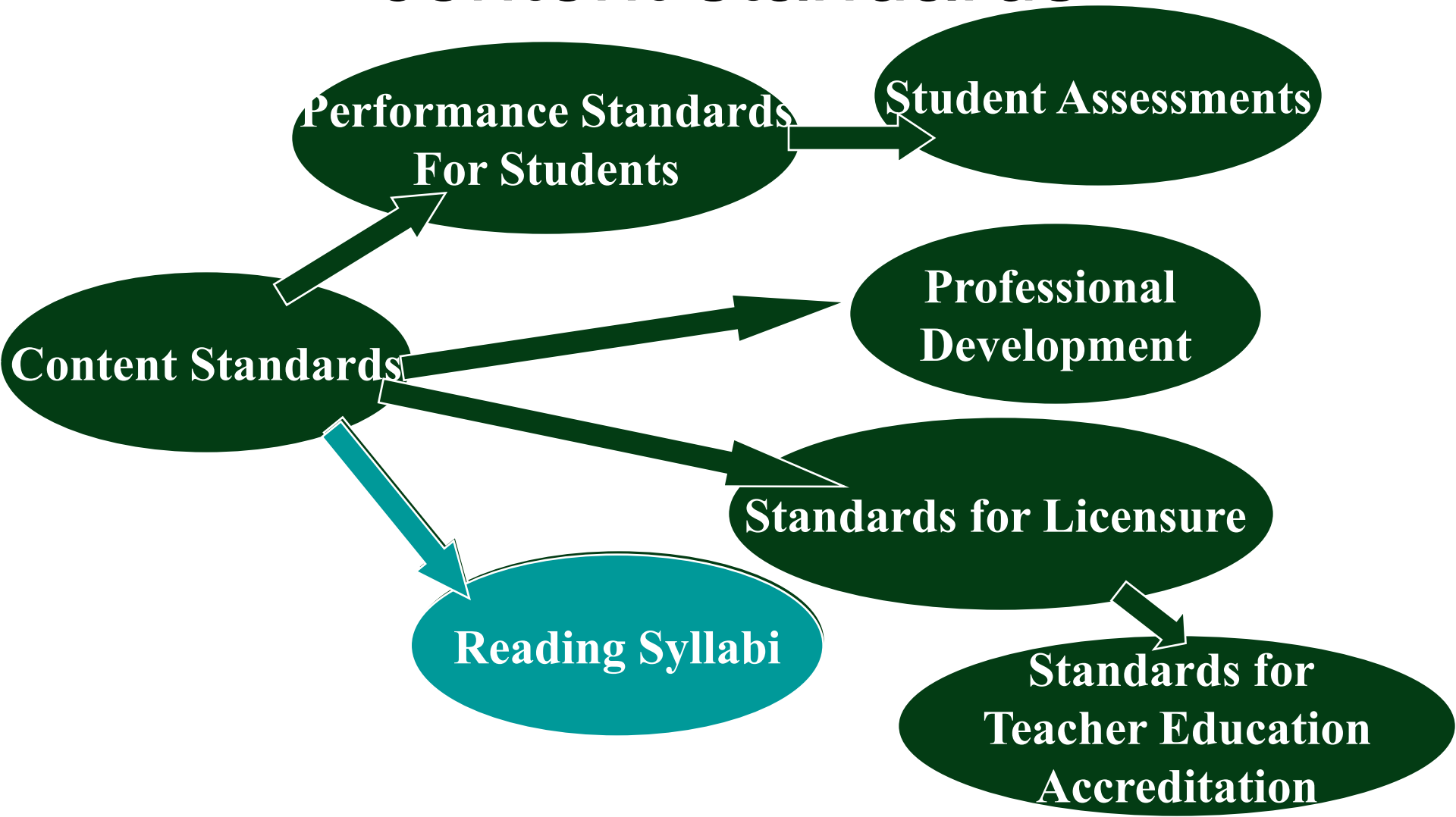
Differences between NCTAF and Fordham

- Professional accountability –
 - Hold system and teachers accountable for getting & using knowledge about what works
 - Ensure access to subject matter and pedagogical knowledge
 - Ensure standards before and after hiring through licensing, induction, evaluation, professional development
- Market accountability –
 - Let almost anyone teach, then fire teachers who don't produce, close schools that do poorly
 - Rely on subject matter knowledge (when convenient) and instincts about teaching
 - Look for evidence of quality (based on student test score gains) after hiring

We still have a lot to learn about alignment

- Should teacher education programs be based on state student performance standards?
- NRP?
- Even NRP authors know that it is not comprehensive

Alignment: The centrality of content standards



The NCTQ report

- Shame on you
- Shame on me
- Great random sample:

So where can we look for good models?

- Hoffman and Pearson, 2000
 - All but one of our exemplary models were professional development
 - Where I have learned most of what I know

Pay attention to the research on professional development

- A great irony: We go to great ends to make sure we are attending to the research on kids, and deliver the knowledge base to teachers in a model that often ignores what we know about adult, particularly professional, learning
- Deep and Broad Professional Knowledge is our only hope in meeting children's needs

Research based practice and professional prerogative

- A real issue in districts in which the pedagogical knowledge base of beginning teachers is suspect.
- In 2001, 40,000 “pre” credentialed teachers in California
- Districts in which 33% of new hires were pre
- Hobson’s choice
 - Adherence to the script in Teacher Manuals versus
 - Vague recollections of one’s second grade experience

Research should promote the teacher knowledge required to exercise professional prerogative

- Teachers deserve a full set of assessment and instructional tools to assess the situation and to determine the most appropriate approach for each student
- They should have the knowledge to look for special characteristics that shape instruction
- And the inquiry skills to do trial and error without doing harm
- And the prerogative to make those choices.
- ONE role for research is to determine the knowledge base required to exercise these prerogatives

One size doesn't fit all teachers either...

- Even if we have “modal” or “default” programs, we will always need to promote flexibility and versatility.
- Even in situations in which teacher knowledge is uneven, we ought not to mandate methods for those who have demonstrated that they possess the knowledge required to make differential decisions

A Full Tool Box...and a commitment to continual learning

- Broad and deep professional knowledge--the kind that expands teachers' repertoires--is, and always has been, our only hope and our only guarantee to a rightfully uneasy public.
- Not a recipe for pedagogical relativism--anything goes!

The other side of prerogative

- If teachers aspire to this sort of prerogative, they **MUST** accept accountability for their knowledge
- They **MUST** be prepared to find that their intuitions and hunches and experiences are not enough.
- And that sometimes new evidence trumps old methods and even best practice.
- In short a disposition to inquire and learn

So what do we know about
the development of
professional knowledge?

Sources

- The literature on PD broadly construed
- The work that Barbara Taylor and I did over several years in the CIERA School Change Project
- Other work that I have been involved in--
 - a 4 year collaboration with a single school in Michigan
 - An IES project on teacher uptake of research-based practices for teaching reading comprehension
 - An undisclosed number of workshops in an undisclosed number of schools...

Why is this an issue?

- No matter the political stance of the reform, Professional Development is seen as the solution
- Long standing tensions between top-down and bottom-up approaches to reform
- Just consider the contrasts...



The Assumptions

- Top down (external)
- What schools and teachers need is better ideas to implement
- Knowledge required exists out there and must be imported
- Task: find the knowledge and apply it
- Bottom up (internal)
- What schools and teachers need is a better assessment of current needs
- Knowledge required exists within our setting and must be catalyzed
- Task: reflect on current situation to find the path to a solution

What do we know about the efficacy of teacher training?

- Teacher effectiveness movement
- Find out what effective teachers do
- Train others to do likewise
- Evaluate the outcomes
 - Fidelity
 - Student learning
- Some evidence to support this approach
 - NRP--teachers can learn to implement strategy instruction
 - A host of training studies from the 80s and early 90s

Qualities of Successful Professional Development Programs*

- School wide and context-specific.
- Supportive leadership: Both the process and the commitment to change.
- Long-term, with follow-up to determine infusion of change
- Collegiality/Collaboration
- Research-based
- Adequate support, especially for cross-classroom visitation.

*Fullan (1990), Griffin (1986), Loucks-Horsley, et al. (1987), McLaughlin (1991) and Ward (1985)

When bottom-up is done right, teachers...*

- become confident in their decision-making abilities
- take responsibility for what is happening in their classrooms.
- develop individual autonomy
- are empowered to make deliberate and thoughtful changes in their classrooms.

*Richardson and Anders, 1994

The development of professional knowledge*

- Teachers who are learning are in the process of redefining their teaching practice
- Teacher Learning ought to be activated rather than bound and delivered
- Teacher Learning flourishes in contexts in which we privilege interactions among teachers
- Teacher Learning is more substantial when there is a personal, not just a professional, learning goal involved

*Wilson & Berne, 2000

The Essence of the Dilemma

- We are pretty sure that some level of external intervention is required because we know that not everyone knows, or can easily learn on their own, what they need to know.
- However, we can be sure that if we hand the knowledge we think teachers need to them on a silver platter, then they may either reject it or, even worse, engage in mock compliance.

So how do we achieve a balance between bottom up and top down approaches?

Embed top down principles within that longer term goal of bottom up professional development

- Establish a broad framework, one that outlines the expertise to be developed, in a professional development program, but allow considerable flexibility in how one gets to the goals
 - **Reading Recovery**
 - **Success for All**
 - **National Writing Project** in the U.S.
 - CIERA School Change

Embed bottom up principles within top down frameworks

- Within externally imposed frameworks, offer opportunities for teachers to develop the elements often missing in TD
- Voluntary choice to promote ownership
 - Different pathways and special topics
- Individual contributions to the collective effort
 - Special areas of expertise, materials, techniques
 - Building local capacity
- Situated practice
 - Immediate tryout in classrooms
 - Double edged sword, depending on success

A set of lessons I have
learned in all of this for making
PD work

Lesson 1: Levels of Independence

- Like students, we all operate at different levels of independence, depending on the topic and our experience
 - Frustration level
 - Instructional level
 - Independent level
- Determines the support and scaffolding you provide

Building a School-wide Assessment System...

- In our work in Michigan, after 2 years, we were at
 - Independent level: Writing Assessment
 - Instructional level: Spelling Assessment
 - Frustration level: Reading Assessment
- In our work in Michigan, after 4 years, we were at
 - Independent level: Writing Assessment
Spelling Assessment
 - Instructional level: Reading Assessment
 - Frustration level: Listening Assessment

Lesson 2: Learning to Work from our Strengths

- When is it best to have PD prepared by
 - A fellow teacher
 - An administrator
 - An external presenter
- What roles do different folks play in the process
 - Who represents the staff?
 - Who are the intellectual gophers?
 - Who provides the support to make things happen in classrooms?
- Build an advisory structure in which everyone is represented -- no other choice, really...
- Use that structure to facilitate communication, planning, delivery, and follow up

Lesson #3: Situated PD

- Internal agenda setting and responsibility
- Ownership--embedded in their needs (e.g., writing, spelling-phonics, then reading)
- Taking our time
 - rhythm and pace
- Honor local commitment

Grade level versus cross grade level

Situated PD, cont

- Tension/dissonance between familiar and unfamiliar in our meetings
 - comfort level
 - collegiality
 - conceptual seepage
- Mentoring new faculty
 - Happened as a matter of course in the collaboratives
 - Assessment is more of a cultural practice (part of everyday life) than an isolated event or entity.

Lesson #4: There are many kinds of leadership--all are important

- Administrative leadership at the school level
- Internal leadership of the core team (can represent the pulse of the school) and communication--a kind of intimate collegiality
- External leadership
 - support the effort
 - provide resources, including time
 - show up to help with the work
 - defend the effort to the skeptics

Lesson #5: People play different roles in different stages of the work

- Flexibility in roles and responsibilities
- Changing teacher leadership from
 - Writing
 - Spelling
 - Reading Comprehension
- Building local internal capacity is crucial

Lesson # 6: Community of Learners

- Evolves over time
- Based upon ever increasing engagement of the players
- Grounded in activity and in the tools we were building
- It must become part of the landscape, the culture of improvement, a learning organization

My conclusion

- We may be forced to take teacher knowledge more seriously than we ever have
- We need to get the assessments right, and I'm opting for matching formats to levels of expertise
- We should investigate, very cautiously, tying teacher knowledge and practice to student performance...BUT
 - We may want to monitor it at the school level, not the individual level (collective knowledge)

More conclusions

- We have a lot to learn from our successes in
 - professional development and,
 - increasingly, in pre-service (note IRA study)
- We must, we absolutely must, take the professional high road

A final word on our mission in life

- Keep our eye on the prize
- Teacher Education is a means to an end--increased knowledge and teaching skill
- Better teaching skills enable
 - Increased student achievement, but... it is useful only because it indexes
 - Increased opportunity to a world of reading that is useful only to the degree that it
 - Improves the quality of life you can lead. That is the prize: Options and opportunities!