Towards the creation of a pedagogical science: the next task for lesson and learning study

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Note:
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If a teacher wants to know how to teach a particular topic what body of knowledge can s(he) turn to?

- It would be very rare to find a well-evidenced and systematically organized body of pedagogical knowledge on any topic within the school curriculum in any country.

- Pedagogical knowledge is the outcome of pedagogy.

- Pedagogy is not simply teaching but also a science. It is the science of teaching.
What pedagogical knowledge is not.

Tacit beliefs about how to teach that underpin practice. They may form a *tacit theory* of teaching but it is only when it is supported by systematically gathered evidence, that it can form a basis for creating pedagogical knowledge.
How can teaching be both practical and scientific?

- It is scientific if it is informed by a theory that can rigorously tested in the context of practice.

- The test for such a theory is whether it yields practically useful knowledge about how to improve the quality of learning in classrooms and schools.

- Pedagogical knowledge is always the outcome of a rigorous process of theory testing involving the systematic gathering of evidence.
Example: teachers’ tacit theories of teaching.

- Informal-structured-guided.
- Informal-structured-open ended.
- Informal-unstructured guided.
- Informal-unstructured-open ended.
- Formal-structured-directed.

*Informal* refers to the creation of space for student to direct their own learning.

*Structured* refers to the pursuit of reconceived knowledge outcomes.

*Guided* refers to methods of teaching.

The teachers’ role as a pedagogical scientist.

Implied by Stenhouse’s idea of ‘the teacher as a researcher’ (1975, Ch.10) who engaged in systematic self-study “through the study of the work of other teachers and through testing of ideas by classroom research procedures”.

Stenhouse argued that, in order for teachers to capture and express their emerging insights to each other, they needed to develop a common vocabulary of concepts and a syntax of theory (1975, p.157). Such a theoretical framework of concepts should be testable by teachers and open to the development of new concepts and theory.
Ford T Project as an example of the development of a theoretical framework to support teachers’ research (see Elliott 2007, Ch.2).

The framework was developed in discussion with teachers about the meanings of the terms they frequently employed when talking about each others attempts to teach students to learn through inquiry/discovery. Hence, were asked in interviews to clarify what they mean by ‘informal-formal’, ‘structured-unstructured’, ’guided-open ended’. 
Ford T teachers clarify the terms they use in their discourse about inquiry/discovery teaching.

*Informal-formal* used to refer to both extent classroom is *decentralised* and the pedagogical aim of *fostering self-directed/independent reasoning* is being realised. T’s agreed to reserve term for latter. The project team then undertook further analysis of the values and pedagogical principles implied by the aim. *Structured - unstructured* used to refer to extent to which preconceived learning outcomes are being pursued. *Direct-guided-open ended* used to refer to kinds of methods T uses to influence learning.
Clarifying the pedagogical aim of inquiry/discovery teaching.

- Values implicit in the aim of ‘enabling independent reasoning’.
- Pedagogical principles for realizing the values implicit in the aim and for testing/developing teachers’ theories.
- Formulating hypotheses about pedagogical enabling conditions and constraints.
Values implied by the pedagogical aim of enabling independent reasoning

- Students should be free to identify and initiate their own areas for inquiry;
- Students should be free to express their own ideas and develop them into hypotheses;
- Students should be free to test their ideas and hypotheses against relevant evidence;
- Students should be free to discuss ideas; i.e. to defend their own ideas in the light of rational criteria, and to bring these criteria to bear on the ideas of others, including those of teachers.
Pedagogical principles (negative) governing extrinsic enabling conditions.

- Refrain from preventing students from identifying and initiating their own areas of inquiry;

- Refrain from preventing students from expressing their own ideas and hypotheses;

- Refrain from restricting students’ access to relevant evidence and drawing their own conclusions from it;

- Refrain from restricting students access to discussion.
Pedagogical principles (positive) governing intrinsic enabling conditions.

- Help students to develop the capacity to identify and initiate their own areas for inquiry;

- Help students to develop their own ideas into testable hypotheses;

- Help students to evaluate evidence in the light of its relevance, truth, and sufficiency;

- Help students to learn how to discuss.
Some general hypotheses formulated by Ford T teachers in the light of the pedagogical principles about teaching behaviours which constrain independent reasoning in their classrooms.

*Topic Changes.* Teachers changing the topic under discussion may prevent students from expressing and developing their own ideas, since students tend to interpret such changes as attempts to get conformity to a particular line of reasoning.

*Positive Reinforcement.* Utterances like ‘good’, ’interesting’, and ‘right’, in response to ideas expressed can prevent the expression and discussion of other ideas, since students tend to interpret such reinforcement as the attempts to legitimate the development of some ideas rather than others.

*Inviting Consensus.* Teachers responding to students’ ideas with questions like “Do you all agree?” tend to prevent the expression of divergence, since students interpret such questions as attempts to impose a consensus view.
Contemporary constraints on the development of a teachers’ based pedagogical science.

1. The increasingly centralized prescription of program’s of study within the UK national curriculum has left little space for teacher experimentation with respect to how students’ experience of topics is best structured. At best the teacher may have discretion with respect to the teaching methods used to implement a particular way of structuring learning.
2. Highly prescribed curricula decontextualise ‘teachers as researchers’ by disconnecting it from curriculum development. The ‘what’ of the curriculum is conceptually uncoupled from the ‘how’ of teaching. Stenhouse saw curriculum development as inextricably linked with the testing and development of a pedagogical theory, which conceptually links the ‘what’ and ‘how’.
3. Educational policy frameworks that recast teachers’ research according to a logic of performativity (Lyotard) with the task of determining in particular classroom settings ‘what works’ to secure the best equation between inputs and outputs. In this context teachers’ research becomes a theoretical and divorces the development of practice from the development of theory. Increasingly it becomes a sub-set of school/teacher effectiveness research rather than an integral part of curriculum development.
The re-emergence of teachers’ research as a form of school-based curriculum development in East Asia (see Lo, Pong, Pakey, *Eds.* 2006).

- Focuses on the collaborative development of a lesson plan through a series of research lessons, in which teachers observe each other teaching in turn, and pool their observations at post-lesson conferences as a basis for revising the plan.

- The Lesson Study, originating in Japan, is now globalizing as a form of teacher professional development (see Lewis, Perry & Friedkin 2009).
Under what conditions could lesson studies form the basis of a pedagogical science?

- The data gathered in the course of a lesson study and the use made of it to improve the lesson should be made publically accessible in some form (e.g. stored in a public digital archive).

- The public case records of lesson studies should conform to a code of ethical practice governing the gathering and release of data, and aimed at securing public access while building trust.
An example of an ethical code of practice (Ford Teaching Project).

1. Individual teachers ought to control both the extent to and the conditions under which other teachers have access to data about their classrooms.

2. Head teachers ought to control the extent to which classroom data from their school are accessible to outsiders and the conditions under which access is given.

3. Individual teachers ought to control access by academic researchers to both their classrooms and private interview situations with students.

4. Classroom data gathered by academic researchers ought to be accessible to the teachers concerned, except data over which students have rights of control; i.e. students accounts of classroom problems and teaching strategies.

5. Students interviewed by academic researchers ought to control the extent to which others, including their teachers, have access to their accounts.

Source: Elliott 2007, Ch. 2)
Lesson study records should be organised around topics, particularly those the teachers find are the most difficult to teach.

Lesson study records for each topic area should be compared and contrasted by review panels, consisting of teacher researchers, academic classroom researchers and curriculum experts.

Such comparisons should be aimed at distilling from a range and variety of cases some general pedagogical hypotheses about how to teach a topic, that can be tested and developed through further lesson studies.
Under what conditions can lesson studies form the basis of a pedagogical science (cont)?

They need to be informed by a well-articulated conceptual framework and theoretical syntax in order to systematically create a pedagogically useful body of shared professional knowledge.

A well-articulated conceptual framework will include a statement of the values that define a worthwhile pedagogical aim—not to be confused with a statement of intended learning outcomes—and their implications for classroom procedures in the form of procedural principles.
Does variation theory (see Marton & Booth 1997) provide lesson studies with a well-articulated framework of concepts and theoretical syntax?

- It specifies **discernment** of the **critical features** of the **object of learning** as a pedagogical aim.
- It articulates a **theory of discernment**, which values and acknowledges students’ beliefs and perspectives and their diversity.
- The pedagogical implications of variation theory can be analysed into procedural principles e.g.
  - understanding the different beliefs that structure students’ discernments;
  - using different patterns of variation to enable discernment of critical features.
Testing the pedagogical validity of variation theory across the curriculum

Experience suggests (see Elliott & Yu 2008, Ch. 8) that more work needs to be done on articulating the pedagogical implications of variation theory in relation to complex objects of learning where it is not clear what would count as their critical features. E.g. controversial value issues, the causes of historical events, climate change.

This requires more lesson studies informed by variation theory to be conducted on complex curriculum topics.
Using Learning Studies as a basis for a pedagogical science: some problems to be addressed.

The data sets from over 200 learning studies exist in Hong Kong but general access has not been negotiated.

Even if access is secured for data sets in Hong Kong and elsewhere more work needs to be done to develop an analytic framework based on variation theory that can be used by teachers and review panels to generate pedagogically useful knowledge from comparisons of data.
We need to know more about teachers’ use of variation theory as a pedagogical tool in Learning Studies (see Elliott & Yu, Ch. 6.2).

JE compared and contrasted some teachers’ power point presentations of Lesson Studies they had conducted as part of the ‘Variation for the Improvement of Teaching and Learning’ (VITAL) Project in Hong Kong. From these brief comparisons based on a small sample the following questions emerged as potentially significant for understanding the potential of variation theory as a useful pedagogical tool for teachers.
Questions about teachers’ uses of variation theory as a pedagogical tool.

Focus: Teachers’ use of variation theory.

In which aspects of collaborative lesson planning is variation theory manifest:
- In defining the intended object of learning;
- In identifying the critical features of the intended object of learning;
- In designing pedagogical interventions?

Which sources of evidence are used to diagnose problems and effect improvements in lesson plans:
- Pre- and post-tests;
- Pupil interviews;
- Peer observations reported in post-lesson conferences?
Who decides on what improvements need to be made in a lesson plan;
- The teacher(s) responsible for the next cycle;
- The group as a whole;
- The academic consultant;
- The teacher development consultant?

To what extent do teachers share authentic and diverse views in the post-lesson conferences?

To what extent does the teacher make pedagogical use of patterns of variation to enable students’ discernment of the critical features of the object of learning?

Are there any differences with respect to (5) across KLA/subject areas?

Are the learning outcomes of students’ the product of authentic discernments of CF’s or the product of copying the discernments of their teachers?
To what extent do teachers improve their content/subject matter Knowledge through the learning study? What are the main factors influencing such improvements?

To what extent does the teachers’ group contribute to the development of new pedagogical knowledge about how to handle a particular kind of content?

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Some tasks for WALS

- To construct an ethical code of practice for lesson and learning studies;
- To design a digital repository for lesson & learning studies, organized around a range and variety of curriculum topics that are internationally recognised as important and difficult to teach.
- To establish international review panels with responsibility for generating systematic pedagogical knowledge from lesson and learning studies.
- To explore the usefulness of variation theory as a pedagogical tool for teachers across a range and variety of curriculum contexts, and its potential as a framework for developing a pedagogical science.
- To establish an international refereed journal to further the development of lesson study as a rigorous pedagogical science.
References

- Lo, M.L; Pong, W.Y; Pakey, C.P.M. *For Each and Everyone: catering for individual differences through Learning Studies*, Hong Kong University Press.