A considerable loss of personal fear: The impact of the Fibonacci Project on Dublin Teachers

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The Project

Fibonacci Project

- Funded under FP7 framework
- 22 Dublin based teachers
- Professional development Programme

Aim of project in Dublin

- To develop teachers' competence and confidence in teaching about Nature of Science(NoS) through inquiry

How?

- 2 year CPD programme
  - CPD Content
  - Professional Development Model

The Fibonacci Project

DISSEMINATING INQUIRY-BASED SCIENCE AND MATHEMATICS EDUCATION IN EUROPE

The CPD Programme

- **2 years** (5pm – 8pm)
- **Workshop Content**
  - PCK in NoS
  - IBSE
  - NoS & IBSE in PSC
- **Workshops**
- **Classroom**
  - Implementing activities
  - Tutor support
  - VLE

Traditional in-service

Traditional professional development in Irish schools

- focuses primarily on the area of curriculum change;
- tends to be in the form of 'one off' and 'one-size-fits all' workshops;

Shortcomings of this traditional in-service include: it is too fragmented, unrelated to practice, and lacking in intensity and follow up

Traditional in-service sessions 'generally prove to be ineffective in changing teachers' practice and have little, if any, effect back in the classroom' *Guskey (2002)*

Effective Professional Development

- enhances teachers' content knowledge and pedagogical knowledge;
- is ongoing and sustained;
- is teacher-driven and involves active engagement;
- is job-embedded;
- is collaborative and collegial.

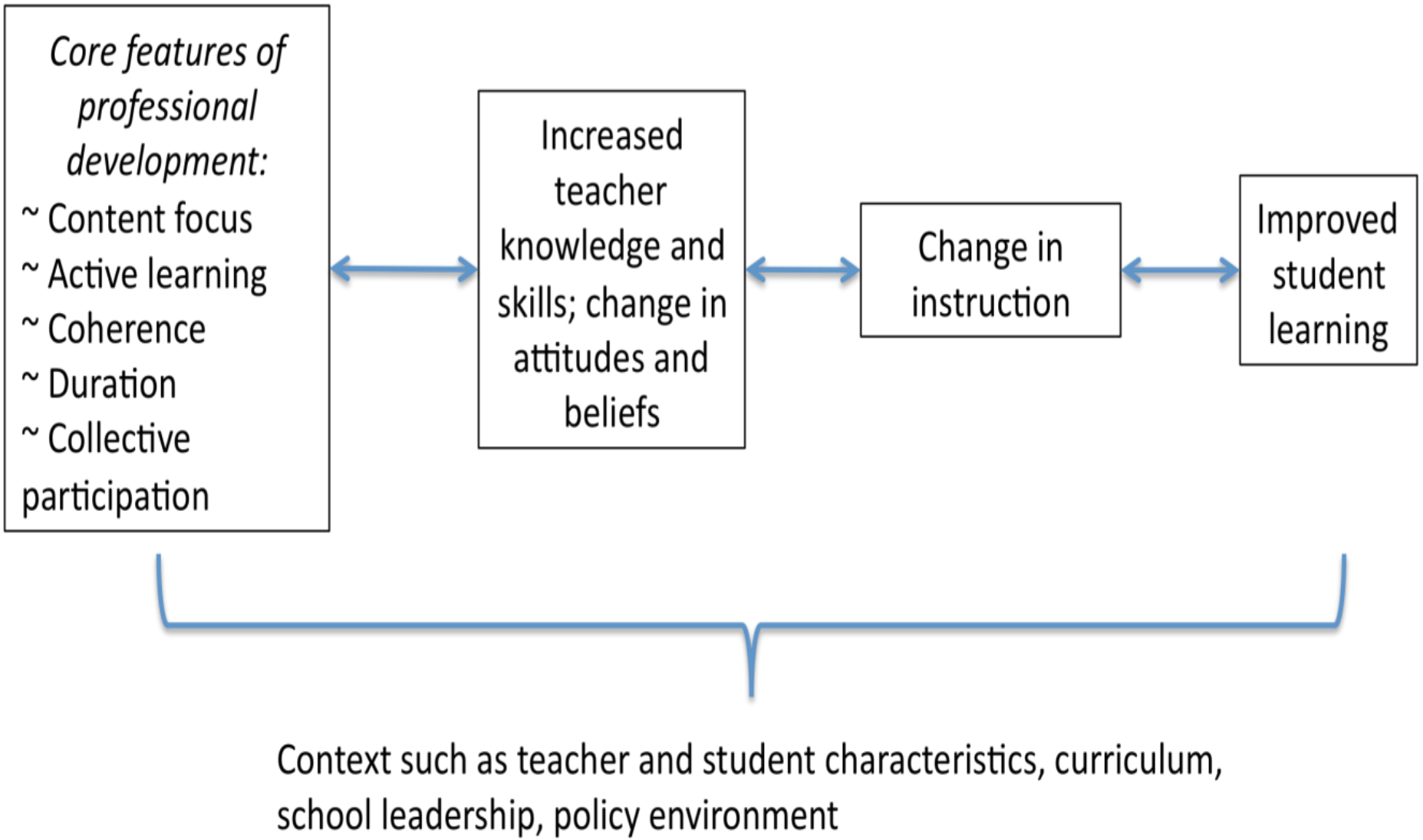
An understanding of the individual involved, their organisation and the change process is the key to improved professional development

(Fullan 1993)

Defining features of the workshops

- Active participation;
- Clearly defined tasks;
- Meaningful collaboration;
- Continuity;
- Feedback / Reflection

Desimone's Conceptual Framework



Research Questions

- To what extent did the CPD programme impact on teachers' experiences of, approaches to and philosophies regarding teaching science?

- What were the teachers' perceptions of the most effective components of the CPD Programme?

Sample & Data Handling

- **Sample**
  - **17** teachers
- **Data collection tools**
  - Interviews
  - Teacher Questionnaire
  - Reflective journals

Findings

Question 1:

To what extent did the CPD programme impact on teachers' experiences of approaches to and philosophies regarding teaching science?

KEY FINDINGS

All teachers reported that:

- They had learned a range of new methodologies for teaching science
- Now teach about NoS through inquiry
- Teach science more frequently
- Have adopted roles as facilitators and have moved away from more didactic approaches
- Less focus on students following 'scientific steps' and 'learning scientific facts'
- Scientific inquiries are more child-led than teacher-directed

KEY FINDINGS CONTD.

- More confident about teaching science
  - Trying out activities in CPD has helped
  - Now realise they don't have to know all the answers
  - Conceptual understanding of NoS has helped

- Philosophies regarding teaching about NoS through inquiry:
  - Is **very important** and should be included in science class
  - Considerable impact on application and development of **science skills**
  - Opportunities for **collaborative work**
  - Development of students' **dialogical skills**

Findings

Question 2:

What were the teachers' perceptions of the most effective components of the CPD programme?

Impressions of programme as model of CPD

Effective characteristics:

- Active engagement during workshop;
- Duration of programme;
- Reflective practice;
- Collaboration with colleagues;
- Challenge – *time/curriculum overload*

Personal / Social / Professional Development

Conclusions

- Teaching about NoS through inquiry appears to have had a range of positive impacts, beyond simply learning about NoS itself

- The CPD model adopted appears to have succeeded in bringing about significant positive change in teachers' confidence in teaching science through inquiry