

# Developing Strategies to Implement Technological Innovation in Educational Institutions: Can Theories Inform Practice?

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## **Abstract**

*Technology has been merged into education in almost every aspect and has also been seen as an engine for change. Understanding the process of innovation and change is absolutely crucial, particularly when introducing the innovation to an organisation. However, it appears that relevant theories have often been overlooked and recent research has shown that people tend to use their own experiences to overcome problems. The study began by exploring the process of innovation, and relating this to organisational change in a higher education context. Theories of innovation and change from different subject disciplines will be explored and discussed. Practical experiences from the implementer's perspective will be collected, critically analysed, and associated with the theories. Recent research experiences from the Higher Education Academy Health Sciences and Practice Subject Network would be exploited, along with practical experiences from participants in UK Higher Education.*

## **Introduction**

### **What is innovation and change process?**

Before exploring the innovation and change process, it is better to clarify what we mean by innovation and change.

Several authors emphasise innovation as newness (Rogers 1995); or any thought,

behaviour or thing that is new because of the qualitative difference from existing forms (Barnett 1943); or as generation, acceptance, and implementation of new ideas, processes, products or services in an applied setting (Mohr 1969; Thompson 1967); or a change which involves not only a change in materials but also a complex of changes with regard to their use (Beal and Bohlen 1968). Some view it as early adoption of a new idea (Rogers 1995), others as synonymous with creativity (Jacques and Ryan, 1978) or as improvements (Havelock 1970). Niehoff (1966) points out that innovation is a process and it begins with 'an idea on the part of a change agent and ends in its adoption or rejection by the potential recipients.'. In general, people see it as positive. It is a change for the 'better', or something that is both new and beneficial (Havelock 1970). However, the terms 'innovation' and 'change' are sometimes used interchangeably in teaching and other places (Marklund 1972).

The type of the organisation itself is another important factor that should be considered (Burnes 1996). The study here has been focusing on change in educational context, particularly in higher education institutions. Rogers (1995) has made it clear that an innovation is not a static object, it interacts with the context of the organisation. Thus, a dynamic reciprocal process ????. The innovation and the organisation change together to create something new, and that

have made the process of innovation and change in organisation appears to be different.

It should be noted here that the study of innovation and change in organisations does not imply and should not be managed as a closed system. Unlike a scientific experiment, a study that interacts with humans and organisations is considered to be an open system since the boundaries can be changed during the problem-solving process, and things can be exchanged with its environment across a permeable boundary (Band, Dempster et al. 2003; Bennis, Benne et al. 1976).

It is hoped that understanding the change process can help us understand how to approach or manage change better when it comes to implementation in an institutional context (Rogers 1995). Thus, we may be able to develop an appropriate plan to manage change successfully.

### Theories underpinning change

The emergence of organisational development (OD) from social psychological writing and practice of Kurt Lewin (1952), and subsequently, the publication of Matthew Miles (1975) describing 'organisational health' provided a grounding for the research into the change process and the school as an organisation. It appears that most change processes described were based on their disciplinary context. In education, most of the studies in educational change referred to Fullan's concept of change, but failed to systematically investigate other theoretical approaches. He initially explains the change process as a series of three overlapping phases: initiation, implementation, and institutionalisation. This is

obviously a linear model. See figure 1.

Similarly, Rogers (1995) proposed 'the Innovation Process in an Organization' in five stages, two in the initiation subprocess and three in the implementation subprocess. Again, a linear model derived from a technological perspective. His concept came from a publication of Gerald Zaltman 'Innovations and organizations' (Zaltman, Duncan et al. 1973).

In terms of managing change, though it had begun with a linear model initially, it turns out that things did not happen in sequence, one after the other, as explained by the model. Other approaches, e.g. formular driven approach (Clarke 1994), problem-solving approach (Morrison 1998), and the stage approach (Clarke 1994) were similar to a linear model . However, it seems that a linear model is not applicable for approaching change. It is clear that change is a process, not an event. The change management theory has, therefore, gradually shifted from the linear model to a spiral model (Carnall 1995, 2003; Smale 1998), see figure 2.

It is explained that, in reality, we have been involved with multiple changes at one time, and change has to be revised and readjusted regularly, until we approach institutionalisation (Carnall 2003).

A good example in this case is to consider technological change in an institutional context. Since technology has always changed, it is clear that change is dynamic, not a static object as it may seem (Rogers 1995). Managing change requires multidisciplinary skills and knowledge from different background, e.g. technology, education, organisation development, psychology, and management (Nadler 1993).

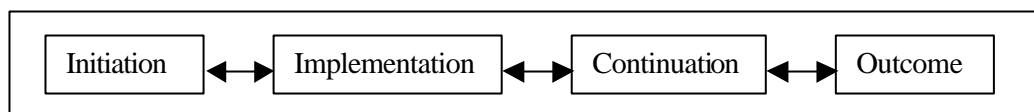
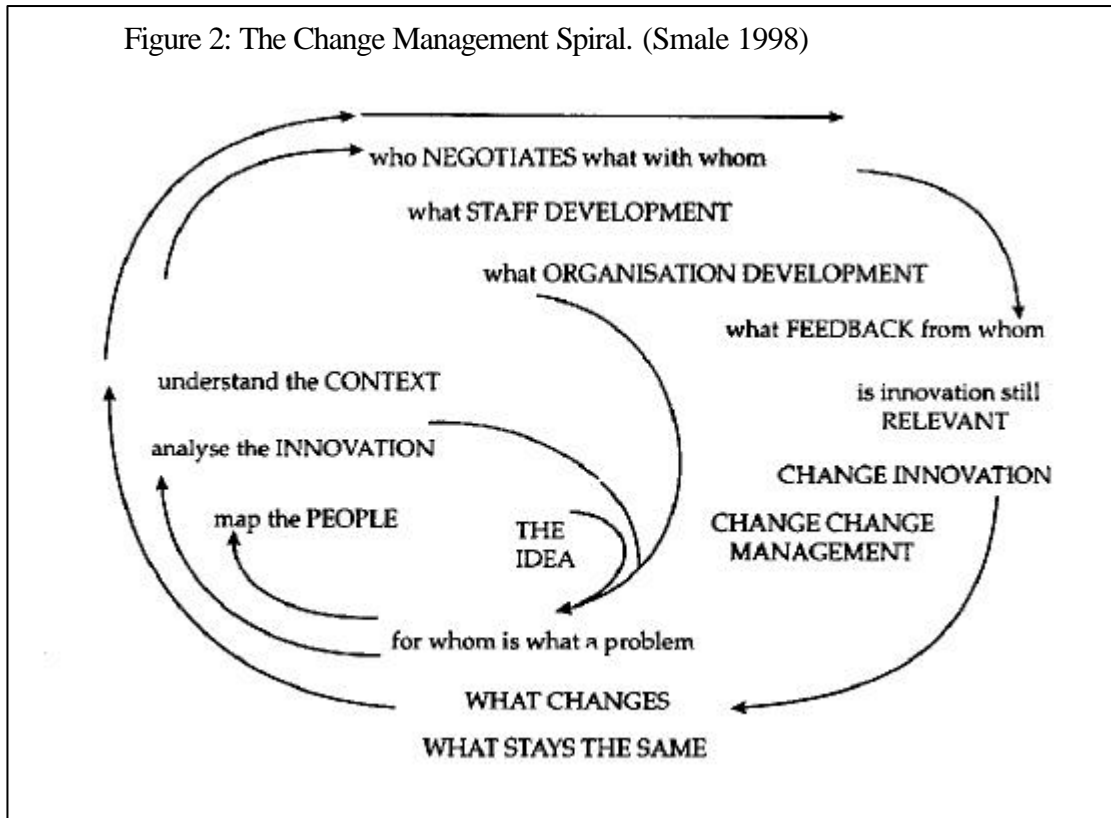


Figure 1: A simplified overview of the change process (Fullan 1991)

Figure 2: The Change Management Spiral. (Smale 1998)



### Experiences from Implementer and Change Agent Perspectives

We organised a workshop at the Festival of Learning in Glamorgan in 2003 with eight people in higher education and NHS organisations participating. In the workshop, practical experiences from managing the development of the Higher Education Academy Health Sciences and Practice Subject Centre was presented and used to trigger discussion.

The Subject Centre was created in 2000 as a UK wider higher education service providing support and development opportunities to all who work in teaching or the support of learning. It is discipline focused with 24

Subject Centres based on individual institutional models. The Centre for Health Sciences & Practice aims to promote the development of good practices in health care through enhancing the quality of learning, teaching and assessment both in higher

education institutions and in practice based education.

**Criteria:** a set of factors against which the practice can be judged as good. **Context,** the constraints and facilitators that influence success (Subject, Students, Self, Surroundings) and an analysis of the **current situation** i.e. what is working well and why and what is not working well and why? There is no point in changing things that already work well! What was clear was, that one size doesn't fit all. Interestingly, the two authors come from different backgrounds and brought a different set of theories to the discussion.

We faced some dilemmas as we created a new service:

- Grass root needs or Policy driven?
- Do we follow or lead?
- Resources focused or dispersed?
- Home grown or imposed?
- Evolutionary or revolutionary?

- Evaluation for development or accountability?
- Practice or theory driven?
- Are our activities based on substantive theory of innovation and change or on habit and practicalities within a particular budget?
- Lack of clarity as to who the change will benefit – government, institution, tutors, students or all?
- Misunderstanding of purposes. Sometimes practice matched theory and sometimes it didn't and a fine balance between the macro policy level and the micro practice level was evident.

Theory (e.g. Prochaska and Di Clemente) says people need to have thought about change, be ready and prepared for it and have a plan for maintaining the change so that it is sustainable within their own context and not a one time wonder. It is also needs to be SMARTER

S pecific  
M easurable  
A ction based  
R ealistic  
T ime related  
E valuated  
R ewarding

Innovation and change takes time so how is success measured?

- A shift from not being aware or even thinking of an issue to contemplating change may be a better indicator than expecting immediate action
- Planning to embed an innovation into policy and practice
- Taking action and implementing change
- Sustaining change
- Impact on tutors has a roll out outcome for students' learning
- Change is not based on evidence (derived from codified and/or cultural knowledge) so does the network support this.
- Insufficient time to prepare – the Network offers opportunities to discuss and work through issues
- Innovation transposed into a different context may not fit
- Unrealistic expectations of impact and outcome measures

Results from the discussion illustrated that some people had theories in mind, while some had to steer change by using personal experiences. They were interested to know how theory could help them achieve what they had planned for, but found little opportunity to spend time exploring or conducting literature review before leading change. Additionally, theories of change seemed to come from many disciplines, and therefore had taken time to review. In practice, the change leader had been expected to conduct the project and was expected to make it a success. While leading change, one expressed that she found herself isolated and could not find any support to guide her through the process.

The theories that they had employed in order to manage change were explored whether those theories were applicable to their context. These issues were ascertained in the workshop and it was made clear that the theories employed were insufficient to guide them through the change process effectively. Identifying size, type, and impact of change, could help in understanding dimensions of change and its conceptual boundary. Change is not necessarily a top-down or a bottom-up approach. A *horizontal approach* has been employed to help increasing collaboration and peer-to-peer decisions to accept a implement change (Ostroff 1999). In academic institutions, for example, it should be clear at what level change will create an impact; international, national, institutional or departmental level (Centre for educational

research and innovation 1973). Each level requires a different approach.

### Conclusion

Theories regarding change and managing change in organisation have been addressing in studies relating to implementing and managing change. However, in practicality those theories have not been critically reviewed and simplified to ease change leaders or implementers to employ them. It has also been illustrated that only theory may not be sufficient to inform practice because of the dynamic of change and multiple changes that come along. Lessons learned from practice sometimes have informed what theory should be adjusted to make it applicable and bridge the gaps. It appears that theory has stayed beside practice, and one is using along with another in parallel.

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