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***The nexus between research and school practice: vision and pragmatics***

A critical investigation of the theory-practice relationship with respect to school improvement.

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## **Introduction**

As will be argued below ample reasons exist why research and practice should be interwoven in order to stimulate continuous improvement of school practice. This is not an argument for all research or development thus being linked, but that it is an important, perhaps crucial, component of genuine and sustained school development.

An attempt to underpin this theoretically was presented in a “centre of excellence” proposal presented by the consortium of research institutions and local authorities (in Iceland) to the Science and Research Council in Iceland. This proposal was among a shortlist of ten projects from all areas of science and technology, but was not among the three finally selected. Thus it is important to refine the argument in order for it to be successful in the next round. We will return to this proposal at the end of the paper.

There is a wide spectrum of theoretical arguments for such a nexus between research and practice. There are, however, also a number of counter-arguments or warning lights, some of which justify the gradual transfer of vocational or professional education seen in many fields from the work-place into the school setting throughout the 20<sup>th</sup> century and would support the continued separation of the two.

First we will briefly outline the various reasons why the relationship should be fostered, in particular by schools. We then go on to discuss in some details the problems that must be faced and countered if a research-practice relationship is to work on a large scale to ensure continuous progress. If these problems are not addressed, it will be argued, analytical and historical arguments will show that well argued, well intentioned, sophisticated projects will not succeed, i.e. not in the sense of becoming a long-lasting part of a new culture; this has some affinity with the empirical analysis provided by Tyack and Cuban (1995).

## **A spectrum of arguments for a merger between theory and practice within the school system**

The relevant theoretical stances supporting the nexus are many: The general issues of communicating ideas, of mastering ideas (e.g. from the constructivist strand) and the issue of transfer of training and of developing expertise; all of these practically demand an intimate relationship between the practitioner and researcher. Furthermore, the research on innovation within the field of education, ranging from the work of Fullan (2003, 2007) on school development to Activity theory within the school system (Engeström, 2008; Tuomi-Gröhn & Engeström, 2003), underpins the importance of such relationship and so do institutional theories.

We only briefly refer to a number of reasons why we think it is imperative to make a very special effort to relate the theoretical enterprise to the daily operation of the school. This is by no means a comprehensive overview, very far from it and is only meant to hint at the importance of the endeavour.

### *Various discourse issues: the problem of communication*

Communication of ideas is always a fundamentally important issue, e.g. as discussed and elucidated by Bernstein (2000) in his analysis of the pedagogic discourse. Two facets of the discourse issue are of interest. One is that the often generic research discourse is thought (by researchers!) to be very important for practice, it is thought to inform practice. Furthermore it is often assumed that the theoretical or research discourse flows rather effortlessly from the towers of academia to the plains of the school. We contend here that none of these statements comes anywhere near the truth, except the very first part of the first one might potentially be true. There is no doubt that both the level and type of (both) academic and non-academic discourse presents quite a number of serious problems for the interaction between the various research and practice communities; problems that must be attended to when we want them to communicate and cooperate in meaningful ways. We furthermore suggest that only by forging the sustained interaction between the different communities, probably in the classroom (or nearby) would one overcome the hurdles of communication.

### *The declarative-procedural gap*

There is no question that the route between the codified “knowing that” and the procedural “knowing how” is among the most interesting and difficult when dealing with knowledge in general and education in particular. It is not the case that propositional (declarative, codified) knowledge somehow automatically transforms into procedural knowledge; i.e. learning in academia transfers to the action in school. This is a fascinating issue, especially as both the whole system of education, but also the research community seem to assume that this is a narrow gap to bridge: as soon as one is informed, knows one’s stuff, it is only a question of applying it. This is, however, not so. There are two quite formidable obstacles on the way. The first one is that the application (the procedure) is not implicit in the information or understanding available. There is a huge gap between the propositional information people have and the eventual transformation into procedures, action. It is very rare that results of research, give any, or at least anything but very primitive hints as to what to do on their basis (even though researchers often seem to think this is easy; it is not). The other obstacle is acquiring the skill involved in applying any procedures that may be considered valuable. Thus even though the gap may be bridged, one is only half-way there, because any application requires proficiency. Thus it is not only a question of finding what action might be appropriate, but the rules of action must be used at ease in the proper environment or culture. This analysis immediately demands that a close relationship is forged between the declarative and the procedural and, indeed, that the notion of constructionism not only applies to the former it also applies to the latter.

### *The development of expertise and situational effects*

Among the most noticeable shifts in educational practice, especially during the last century, has been from the emphasis on skill and practice to knowledge and understanding, i.e.

from the apprenticeship (procedural) model to the model of attained knowledge (codified), with the proviso that the quite popular notion of constructivism tends to be placed there in between. What has been, largely, left out has been the idea of skill and mastery, except perhaps within the fields of music and sport. In this context the literature on how people develop expertise is of considerable interest. This seems to be normally neglected, i.e. the difference between attempting something and becoming skilled at it, master it: becoming a professional. It relates well to the expertise literature which states that people must become skilled at what they should be doing in order to be able to perform, even in somewhat unfavourable circumstances. We are not necessarily claiming that one should go by the 10.000 hour rule, but still want to emphasise that it takes time, involving both training, reflection and a mixture of self-confidence and modesty to become an expert; see also (see also Desforges & Fox, 2002; Ericsson, 1996; Ericsson, 2006). Grenier and Kehrhahn (2008) also present a comprehensive overview of the matter as it relates to teaching. The only point we want to make at this stage is that the education of a flexible teacher and her development as an expert should take place both within academia but also within the school (workplace) with the reflective communication with the mentor, the supervisor or whichever term we want to use for the person representing the academic (i.e. detached but reflective) community. This relates also to the massive situational effects on learning which suggest that a substantial part of professional development (and not only initial learning) must take place within the setting it is operating.

#### *An attempted synthesis*

A very preliminary synthesis, based only on the fragmentary points being made above, adopts to some extent Dewey's constructive learning ideas, - perhaps learning by doing, or rather his emphasis on learning by reflective action (later developed by a number of authors). The synthesis refers directly to the argument of interrelating theory and practice at the level of the school or class.

The level of the individual teacher. The individual teacher, who is grappling with a certain situation or task (or normally both), must be empowered, on her own, but normally in a team, to cope with her situation. This means analysing and then proposing the implementation of appropriate actions, and in the process such confidence and expertise should be gradually gained that this operational mode becomes sustained. There must be some kind of interaction between the teacher (and her team) and the researcher, centred on the situation and the task at hand. This is, in many ways, the most difficult phase and draws on a number of the ideas above; in our view it requires, indeed, a teamwork of the type hinted at here.

The community of practice. There must be a community of practice, whether it is the whole school, or most likely a group of teachers or school workers that work together, which enable support, discussion, and general social support and criticism that enables the development of the ideas, without an undue threat of a burnout of some sort.

Implementing a new operational mode must enjoy general involvement (ownership) and be a genuine teamwork.

The community of the school. The context of the situation may include the elements crucial for success. The culture of the school and the moral of the community attending the school, the support of the teachers, the salary structure; all of these and more are factors that all may be both crucial facilitators and major obstacles for the success of any change or innovation.

The student. Of course the whole operation centres on the student, both as an individual and a part of the society; and thus the quality of learning and formation is the issue. But in the project the effort is aimed at enhancing the quality of the schools, in order to achieve this.

Here we have presented a very cursory summary of some of the arguments why a special effort is needed in order to relate in a sustained way and on a relatively massive scale the competencies of academia and of the schools in the schools themselves (but perhaps also in academia from time to time) in order to foster a continuous professional development of educational practice.

### **Some general concerns and approaches**

But these concerns that all relate to the importance of the intimate relationship between theory and practice are not only relevant to the narrow confines of educational practice within the school system. In all fields there are deliberations related to the relationship on a macro level related to both the Mode 1 – Mode 2 classification and the Triple helix, all of which are preoccupied with bridging the gap between the world of research and that of innovation and development.

The major point relating to the Mode 1 - Mode 2 discourse is the view that producing knowledge that is geared towards integrating research and practice should be seen as a major operational target of modern universities, i.e. universities should be seen as entrepreneurial institutions (see e.g. H. Etzkowitz & Leydesdorff, 2000; Gibbons, et al., 1994; Nowotny, Scott, & Gibbons, 2003). The related discussion on the Triple Helix model, which is now being adapted within a number of fields, e.g. education, expressively attempts to institute a connection between academia, industry and government. This is a more formal model of the interaction between these three critical agencies, (see e.g. Henry Etzkowitz, 2008; H. Etzkowitz & Leydesdorff, 2000). This discourse and the presentation of the accompanying ideas underscore the problem being tackled, i.e. that the flow of ideas between these worlds is seen to be very constrained and need a massive stimulation. In addition to the strong tradition of an apprentice based initial education there seems to be a massive theoretical justification of somewhat single minded and explicit and procedurally based innovation or developmental mode of operation, in order to weave together research and practice on a massive and sustained scale.

It needs to be spelled out that this is only a part of the story: it does not imply that there should not be free research at the universities (Jónasson, 2008a), nor that the interaction between research and potential innovation can only take place at the shop floor, so to speak, or in the classroom. New ideas may grow in many different environments and often, indeed, within the purview of academia (Lester & Piore, 2004). It is only being claimed that it is an unreasonable and indeed an irresponsible attitude to claim that a fruitful and indeed a very important interaction between research and practice, which leads to sustained innovative development, occurs naturally and spontaneously; this is much too rarely the case, when we consider the whole spectrum of science and technology and definitely all too rare within the field of education.

### **No plain sailing: perspectives that must be taken notice of**

The marriage between theory and practice does not characterise the daily routine of schools, nor the normal innovative processes operating, even though there are a host of examples of a fruitful co-operation. It is taken to be an important example of an innovative operation within the school system and we want to understand the forces that may control, and thus facilitate or stifle its implementation. It is not the aim of the paper to catalogue the successful or less successful examples but to bring to the fore a number of factors that may stem or stifle such success, but most importantly, that may hinder the scaling up of successful prototypes. The aim of the paper is to pinpoint the hindrances for successful and sustained innovative programmes within the educational arena. The paper has four different sources of inspiration which mould the frame for the discussion of the hurdles to be passed.

#### ***Source 1: Tyack and Cuban's (1995) analysis***

Tyack and Cuban (1995) describe how a number of projects that were implemented during different parts of the 20<sup>th</sup> century in the US, gradually disappeared, even though important traces may have been visible for a long while. These were projects that had everything going for them; they had been successfully piloted, were run by visionaries and enthusiasts who knew what they were doing, had massive support and most of them at their high tide were run at a fairly massive scale. They did, however, not last as distinguishable projects nor did their most distinguishable features remain easily visible. It is a dramatic description of failure of innovative projects that had everything going for them. Tyack and Cuban introduce the notion of “grammar of schooling”, i.e. some implicit unwritten rules that control the way schools operate, as an explanatory construct to explain why some types of ambitious changes are successful but also why a lot of them are not. If these rules are not recognised and taken into account in some way the most well intentioned changes that go against them are doomed to failure. In a kindred analysis of educational innovation in Europe over centuries, inspired partly by the above text but also by Myhre (1996) I have argued that a host of well argued innovative schemes within a “child centred – interactive” family of ideas have, over the centuries, repeatedly been introduced and implemented and

often on a massive scale but have somehow gradually dwindled (but perhaps not disappeared) in the long run, probably for similar reasons as those suggested by Tyack and Cuban (Jónasson, 2008b).

### *Source 2; the moulding forces of education*

The paper will develop arguments originally focusing on vocational education (Jónasson, 1998), but now extended to educational practice more generally to show that there are many pragmatic reasons for theoretical visions becoming impractical or even untenable, despite being addressed by the arguments presented above, unless perhaps when tackled head on.

A perennial and a universal problem is an apparent if only gradual demise of vocational education whereas academic tracks seem, if ever so gradually, to gain strength. This has already occurred at the upper secondary level in the Nordic countries (Jónasson, 2003) and is possibly occurring at the tertiary level even though this may certainly be debated (Jónasson, 2006a); an interesting twist is presented by Labaree (2006), where he argues that US higher education looks professional or vocational on the outside but on the inside it looks academic. This development seems somewhat of a mystery as the discourse seems to favour the vocational strand. But when considering the actual effects of the labour market, with its unclear salary structures but nevertheless implicit emphasis on credentials (i.e. when selecting new employees); of the school system with its implicit status differentials; of the societal pressures and of government funding and even definitional issues, all of which affect the standing of the vocational tracks in the same way, then it can be argued, as does Jónasson (1998) that it is very understandable that the vocational tracks lose ground, even though the students' intrinsic interest would favour them. A kindred line of argument is presented for the US scene by Grubb and Lazerson (2004). It is also well known, both from the organisational literature, but also from the literature on the reform or change literature within the field of education that the various forces outside the immediate setting which is to be reformed may in the end determine the success of any change efforts (Fullan, 2003, 2007; Hargreaves, Lieberman, Fullan, & Hopkins, 1998).

Thus a variety of institutional or political driving forces may be in control that seriously undermine the implementation of a variety of well argued and well intentioned educational reforms; see e.g. Jónasson (2006b) on the development of pre-school education in Iceland and a discussion therein on some of the problems faced by the pre-school teachers who are facing essentially the same developments of academic drift and systemic drift as are occurring elsewhere in the system; see also Jónasson (2003) on secondary education where he attempts to argue that the students themselves rather than the central authorities or the schools are the drivers of change and Jónasson (2008a) presenting a detailed analysis on how the universities may be affected and essentially driven by forces outside their immediate control, notably by the wishes of the students. These forces relate to the culture of teaching, the economics of education, problems

related to status, salary schemes, uncertain mission or aims of the educational institutions and indeed the influence of the various stakeholders of any educational institution. The point being that certainly at the macro level and by implication at the micro level changes are largely driven by forces outside the school system. If these forces are undervalued it may be difficult to understand why innovative reforms are not always proceeding according to a strategic plan, at least not in the long run, even though the plan looks sound.

*Source 3; an example of innovation: Assessing the impact of innovation within the area of ICT*

In the last three decades a massive effort has been made to introduce, first computers, but then ICT into education, on the grounds that this would probably totally transform, or at least fundamentally change the way education would transpire within the school system. This has indeed been with some success, but I would maintain, with far less impact than the original vision of change and a continued massive PR and financial support has justified or perhaps required. Given the financial and political input and the massive growth of technology in society in general it may be suggested that the impact is surprisingly small. As an example of quite an ambitious assessment of the impact of innovation, the arena of ICT is an interesting one. Assessment schemes, such as the POETiC (Jónasson & Dofradóttir, 2004), and later the kindred SIPTEC criteria have been suggested, now within the impact assessment frame, STEPS.<sup>1</sup> The acronym, SIPTEC stands for S(systemic), I(institutional), P(pedagogical), T(technological), E(economic) and C(cultural) factors that may determine if a particular innovation is successful or not.

When assessing the possible impact of an ambitious ICT tool on education, it would probably hold true for most people that it is its pedagogical value or strength that is of most interest. In one such study (using the early POETiC framework) it transpired that in fact all the factors were influential, either in facilitating or impeding the implementation of the ICT tool, except the one of principal interest, i.e. the pedagogical factor which hardly managed to manifest itself (Jónasson & Dofradóttir, 2004). There were a host of O(organisational)<sup>2</sup>, E(economic)<sup>3</sup>, T(technological)<sup>4</sup> and C(cultural)<sup>5</sup> factors that came into

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<sup>1</sup> See e.g. the Steps project <http://steps-project.wikispaces.com/> (accessed in January 2009). The STEPS framework, quite sensible refers to all levels of the system, i.e. Society, the Educational system, Schools, Teachers and Learners, but a suggestion of an interaction between these levels may be lacking.

<sup>2</sup> Such as who should be responsible, who should decide how much time should be spent or who might participate apart from the enthusiasts.

<sup>3</sup> Who should pay for training time which might be needed over and above the time provided by the project? Who should pay for fixing unforeseen problems; would the school need to pay for any access to the project after the testing phase was over; who would then pay for any development needed? It was anticipated that the ICT tools within the schools were adequate; but who should pay if they were not. What indeed were the financial implications of adopting a new tool like this in the long run?

<sup>4</sup> How should unforeseen technological problems be solved? Who should decide if the level of technology was adequate (especially if it was visibly inferior to other schools testing the tool)? Who should guide the novices if the handbooks very insufficient?



play and indeed directed and in the end controlled the implementation of the project. What was perhaps of most interest was that by hindsight these controlling forces were quite understandable and should have been foreseen, but the enthusiasm of the participants and the apparent power of the tool in question seems to have somehow affected their judgement on the matter. It was consequently suggested by the evaluators that testing of the implementation of such ideas as they were being scaled up, after the normal alpha-testing should definitely have two beta phases: one (beta1) in a new but favourable environment with a lot of supporting know-how and the second (beta2) in a more typical or normal school environment, which was, however, willing to participate in a testing phase. What is interesting is how such a clear-cut case of implementing a self-contained and well specified new idea or tool demonstrates in a fairly simple way how many different aspects of the school operation come into play even though the project was essentially simple and self-contained. It is suggested that most innovative or reform projects are much more complex and ambitious than the example taken here, the criteria used by the STEPS project, such as the SIPTEC criteria may provide a very useful framework for evaluating such projects.

#### *An attempted synthesis*

Here we have introduced three very different perspectives for looking at the development of educational practice, i.e. the perspective of history, hinting at the somewhat troubled track of educational reform; the perspective of societal forces outside the school that may have more to do with its moulding than appears at first sight, and perhaps more than the insiders want to believe, and then the perspective from inside the school, where a myriad of interacting forces come into play and determine the fate of ideas that at first sight seem both eminently sensible and easily tenable and thus be on the straight path to unquestionable success. We might perhaps have introduced different perspectives, and certainly given a very different slant in each case. But the point is that all these perspectives must be taken into account when attempting to introduce or to scale up an innovative project either into a single school or into a school system; when it is intended to create a sustained innovation of educational practice, given that it can be shown to be sensible. We must learn from history, we must understand the external forces at play and how to grapple with them and we must understand the forces moulding the daily routine of our schools and how they come into play at every stage – if we want to foster genuine and sustained change.

#### *Source 4, establishing a research practice organisation*

The fourth source of inspiration for the discourse on hurdles facing the nexus between research and practice is a proposal for a Centre of excellence on the merging of research

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<sup>5</sup> How should the new material or working methods be adapted to the school curriculum, both in terms of content and methods? Who should decide if it was appropriate after the testing phase was over? In an international project what emphasis should be laid on translating all the material both for students and teachers (at least if it was going to be implemented on a larger scale).

and practice submitted in October 2008 to the Icelandic Research and Technology Fund. The proposal was shortlisted among 10 out of 80, but was not among the 3 finally chosen, from all fields of science and technology.

The present paper is a first step in a renewed effort to construct a feasible project to submit the next time around. We want to explore much better than before the theory behind our endeavour. We also want to focus on the hurdles we may face while constructing and developing such a proposal and project.

What we want to touch on here is the experience of constructing the proposal. The proposal was basically constructed by a number of researchers at the School of Education at the University of Iceland and development experts at the City Council of Reykjavík.

There are two facets to this project development that will be brought out here. The cooperation between the principal partners was smooth, and very constructive: it went very well. But both sides had their problems. The university group who wanted to co-opt their colleagues found understanding and interest and even enthusiasm, but at the same time they expressed some concern that their respective research aims might not be fully respected. They move in a culture that rewards high calibre academic research, which should be guided by their academic interests and they felt both that these interests should be respected and it should be ensured that the money spent should largely go to proper research. Basically they wanted to participate but largely on their own terms. It should be acknowledged, however, that as each individual group would not receive huge amounts of money, some thought it not worth their while to spend substantial time developing the project. The problem was similar on the other side. As this was a somewhat general proposal it was not clear to what extent individual teachers should be involved at the moulding stage even though the expert representatives of the city council in charge of the compulsory and kindergarten education were fully involved.

Thus the logistics of constructing the proposal need to be reconsidered. It was indeed criticised for a) not involving teachers sufficiently, b) being too loosely controlled if we were to construct a credible unitary and sustained working relationship between the schools and academia (but we were respecting the independence of the research groups) and c) for not building up in a controlled way the needed international competence.

The criticisms were not unreasonable, but we also noted that even if we get through these hurdles there are numerous additional ones as we have recounted in the paper that must be foreseen in our design if we not only want to succeed with the proposal but with the project as a whole.

### **Concluding remarks**

We think it goes with the current trend to praise the relationship between theory and practice. It must, however, not be forgotten that this is nothing new and has characterised a large body of educational thinking, at least within Continental European educational

discourse during the 19<sup>th</sup> and 20<sup>th</sup> centuries (Myhre, 1996). The relationship between the two has nevertheless always been strained and the signs are it will continue to be so, despite massive rhetorical calls for a close and a genuine liaison. In the paper we have suggested some of the reasons why a close relationship is so crucial, but we believe that the arguments need to be much more eclectic and wide-ranging. Whichever way we look at them, we find them already overwhelming.

But despite what we consider an impressive array of arguments for the nexus between theory and practice, we have introduced two perspectives that indicate that changes from within (or at all) may turn out to be somewhat difficult to achieve.<sup>6</sup> First we discussed the forces outside the schools, and second the internal or institutional impediments, in the guise of operational features of the school. Thus we present a number of reasons why any intrusion into the normative operation of the school has a somewhat limited chance of a long-lasting survival, at least on a large scale – at any rate if we don't understand these reasons and if we don't deal with them or take them into account. This we intend to do, by developing our arguments and our proposals.

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<sup>6</sup> Only while completing the paper a third class of impediments should also be mentioned: it has been staring me in the face and indeed discussed by (Jónasson, 2008a). It is the rule system and culture developed by the academic community itself. Both of these, hand in hand actively discourage any substantial interaction of the type discussed here; but *nota bene*, only in practice, rhetorically this is not so.

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