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Inert Knowledge in Tertiary Teacher Training and How to Activate it

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Abstract: The progress of the education development in Vietnam is impressive as recently shown in the very successful performance of Vietnamese students of the last PISA round. On the other hand the problems are still tremendous, above all in tertiary teacher training: many colleges and pedagogic universities are under-equipped, their scientific level is poor and their ability to carry out effective reform steps is low. In this situation it is stunning, that the approach of A*ction Research* is still so undervalued in Vietnamese colleges and universities The approach of *Action Research* is an established strategy that aims on behavioral change by systematic self reflection and do not need expensive financial means nor highly qualified personnel. The article presents a reform strategy which avoids detailed external defaults and motivates the persons directly involved to put into practice self directed new teaching/learning schemes instead. This self learning by doing promises very effective results as they are based on the direct experience of individuals and groups. To promote the sustainability of this learning scheme and to foster the scientific skills of the participants at the same time the necessary reflection must be conducted by simple means of and according to systematic research. Learning by practising science - even in a simple way - means to join the most effective way of sustainable learning human civilisation has developed: learning systematically according to basal scientific principles. An additional appeal occurs out of the fact that this plan can be realized under the poor conditions of many Vietnamese colleges and universities, that it takes into consideration the particular preconditions in situ and that it tends to establish an enlarging new learning culture.

Keywords: Action Research, Scientific Learning, Learning by Doing, Teaching/Learning-Culture.

1. Inert knowledge

Plenty of empirical studies show that learning in school and university frequently results in inert knowledge [15]. Inert knowledge is, from the learner's point of view, defined as widely unconnected information which cannot be assigned to superior contexts, not linked to comprehensible parts of reality and inusable for solving practical problems. This opening statement points to a fundamental problem of teaching and learning in schools and colleges:

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in terms of the various subjects to be taught the learning material reveals often a considerable gap between knowledge and action. This constellation is in schools in principle inevitably: the subject teachers are no specialized practitioners, the biology teacher is no biologist, the English teacher no Englishman, the teacher for Vietnamese literature is no literary scholar, nor a writer. They are teachers and their practice is the teaching of pupils and students, including the fact that the content of the school subjects have little in common with in the respective scientific disciplines, except the names. At universities, the problem is shifted slightly, but equally virulent. Take the example of teacher education: the preparation for the different school subjects is covered by expert scientists. They usually know little about the future professional practice of their students. The subject oriented educationalists should actually act as hinge between science education and school practice. Often, however, the academic teachers know not much of real school practice and the relevant scientific units in colleges and universities are often of poor scientific quality in research and teaching according the up-to-date state of the art. The core professional disciplines such as pedagogy, psychology and especially general didactics have indeed as their scientific subject educational and teaching/learning processes. However, usually in teaching about the numerous branches merely instruction from teacher to students takes place, often only piling great amounts of inert knowledge. Teaching and learning processes during the study courses are usually not thematized. Significantly the connection with teacher's practice takes place *exclusively* via external practical courses in schools.

The systematic transfer of knowledge in the education of children, to youngsters and to young adults in schools and colleges or universities has generally the basic problem to provide a lot of knowledge which is not integrated into the experience realm nor the appreciation of the students. Consequently the alumni loose most of the learned almost shortly after having absolved school or university – unless there has been a special interest in a subject. From the beginning of their school-time pupils and students are used to produce enormous memory performances for tests. These memory exercises they learn over many years, often not the intended contents and contexts of the subjects. There is often only left that one remembers that there has been a topic, that it has been understood and that the examination has been successful. So university entrants already have 12 years learnt how to store a lot of disparate knowledge and to pass examinations about it. The learning scheme in universities and colleges mostly does not differ from it. Only the level of abstraction and complexity is higher. Most of this knowledge is only *pooled knowledge* and will be forgotten quickly after the test. In order to understand the comprehensive sense of study content and to keep it for a longer time in mind, it has to be *active knowledge*. For that it needs, first of all, the following elements:

- The acquisition of knowledge has to be motivated by interest in the learning subject. (Mueller, 2006). This interest may be caused by different reasons. Of course, the school, which students have to visit due to compulsory education, is already in itself a strong interest-element for the pupils and students. Likewise, the instruction or even a recommendation from the teacher, to be interested in something, is highly relevant for students - especially if this is coupled with sanctions. This may be sufficient for passing successfully the next test, perhaps some content survives the following month. But

crucial for the long-term learning success is the intrinsic motivation of students. [19]

● The knowledge must be brought into the solution of questions and problems which are relevant to the learner. (Grabinger & Dunlap, 1995) This is the contentual coupling of the intrinsic motivation. Not the knowledge as such is relevant, but its specific usability for the solution of questions and problems in different situations. The modern learning target orientation in schools and universities on competences corresponds to this principle. [14]

● The fundamental teaching contents must have been transferred in technical routines. If this is reached, it can be applied, even if the underlying knowledge is present perhaps only rudimentarily. [12] Behind this statement stands the idea of the spiral curriculum: Students receive learning subjects in an arrangement which is designed as a progressive curriculum, systematically building a step-by-step understanding of basic underlying concepts with the subsequent addition, and feedback, of more advanced information over the course of the training. [6]

At least one of these elements must be in place so that knowledge is preserved longer and it is available in case when it has to be integrated in new contexts or when new problems are to be addressed.

2. Vulnerabilities to inert knowledge in Vietnam's teacher training

The tremendous progress of Vietnam's tertiary education in the last two decades is stunning for a developing country and compared with many other, much wealthier nations. Nevertheless many problems remain and are hampering the further prosperity of Vietnam and its fast developing economy [26]. The following points marking deficits of higher education must be considered differentiated. While science and technical faculties are widely standing on an already decent level, humanities and social sciences and especially teacher training is often in a poor condition. Against the professional background of this article's author and due to the treated topic the latter sector is predominantly addressed.

Qualification of tertiary teachers

The qualification of many lecturers is rather low and unequally allocated across the institutions for higher education. Normally the better lecturers with good professionalism are gathered in the big universities in the cities. But even here are many lecturers with limited command of their subject. Many of them graduated from universities in Eastern Europe decades ago and have not upgraded their knowledge, be it due to lack of opportunity and/or due to personal inertia. Regarding the level of the scientific staff in many faculties and colleges for humanities, for social sciences and for teacher training Vietnam is still far from an internationally competitive system.

Additional reasons for the poor performance of many tertiary personnel are: low payment, scarce resources for suitable further qualification, lack of scientific cooperation with other universities especially foreign ones. The latter is caused by the weakness in foreign language ability of many lecturers. Simultaneously many Vietnamese graduates with good or excellent examinations from both, foreign and domestic universities are not willing to work in Vietnamese universities, because they are not attractive for them due to the drafted shortcomings, above all, when they run into danger to be rejected by a mediocre resident academic staff and administration.

Level of research

Research at Vietnamese Universities is on the one hand urgently demanded by the fast changing society in multiple international competition. On the other hand research performance primarily in humanities, social sciences and teacher education is still pretty low. [24] There is a traditional and considerable gap between teaching and researching in universities in Vietnam. Not only teacher training universities and colleges are considering teaching as their first, and often sole, priority. Only when the tertiary education reform [7] was implemented beginning in 2006 the internationally established close connection between teaching and researching was imposed in Vietnam too. Enhancing of research activities inside universities is demanded as well as networking with independent research institutes outside. Vietnam National University, Hanoi and Vietnam National University, Hoc Chi Minh City are on their way to Centers of Excellence. Vietnam still has a long road to go before reaching a research level at which universities play a key role in the countries` further development and where modern teaching stems back to an own research practice. [8] Until now, most of universities in Vietnam are lacking of adequate research infrastructure like labs and IT equipment, and many libraries are in poor condition. Many lecturers do not have own research experiences nor have they even appropriate perceptions of solid scientific practice, not to mention the level of international states of the particular art. Many university lecturers do not participate in any scientific discourse. The language threshold for many academics in the scientifically weak tertiary institutions is the main reason for failing to exploit the huge opportunities given by the increasing general accessibility to internet sources and communication platforms.

Quality of study contents and conditions

The current curricula-system for students is still systematically not sufficiently integrated, often outdated, compared with international standards, and content related over loaded. The latter may be understandable since lecturers and specialists from ministries, departments, university boards, etc. always want to provide students as much knowledge as possible, and every participating expert has ambitious ideas of "what every graduate should know". However, that is the core reason for producing inactive study behavior and deserts of fast forgotten knowledge pools. Another weakness is, that almost all subjects focus on theoretically deduced canons of often much too detailed knowledge which is not linked to real problems and/or substantial facts and figures. So students often are weak in generalizing their knowledge and in transferring it to practical problems. Vietnamese tertiary lecturers often fail to teach their students a broad knowledge and a consolidated understanding about a profession or a field. Vietnamese students study a lot but they understand little, focusing primarily on the coming test or exam.

Another weakness is the traditional routine in learning methodology. To succeed in the numerous performance checks which mostly ask for right solutions students are well advised in following the pre-set "recipes" like cooking. They follow exactly they are told by their lecturers. They in turn are practicing teacher-centred methods and students learn by heart the lecture contents without sufficient understanding. In exams students are evaluated actually through their memory performance. Students - at least in the addressed disciplines - very often have no adequate perception of scientific research substantiations, approaches, methods and standards nor do they have any practical research experience. They do not

know how to select a research topic, to set up a research plan, to choose a research methodology and to evaluate a formulation of a research question, even during the initial steps.

Vietnamese students are industrious in studying, sad to say, predominantly due to the pressure of the many examinations. When they come to the university or the college they are already familiar with this situation: Since the first day going to school, they have been used to this stressful learning program. Most of them had to attend classes outside school to accumulate more knowledge in order to pass the examinations. The study habit from high schools are brought into the universities when these students join them. Students do not have incentive or merely time to develop a reflexive and creative learning behavior or finding innovative ways to approach a topic. They also do not have time and experience to learn from their faults, nor do most of their their teachers accept learning by mistakes as a promising learning strategy. As a consequence students in the context of exams often know a stunning lot of facts, without any appropriate understanding of the superior meaning, importance and impacts. At all levels from school to university, the necessary creative virtues for students is not paid enough attention to. Core competencies like self-confidence, independence, ability to be critical, social and communicative skills are much too little supported.

Limited abilities of graduates

The outcome orientated quality of tertiary education is always a hot topic in many debates, carried out openly, about education reform . [10] Apart from the above mentioned points, a poor quality culture is another reason for the quality deficits. Only since late 2004, a nationwide system of indicators for obligatory standards is developed in order to accredit universities, departments and study courses . [27] New and modern insights of a reasonable understanding of quality is elbowed arduously against traditional input concentrated approaches. This new, quality centered view, of educational processes underlines the *difference* between intention and ressources on the one hand and the empirically evaluated results on the other hand. To follow this understanding, it is necessary to identify the input-output-quality. Since there is not consistent standard system applied for the whole country by now, the scoring for student´s achievements, concluded from examinations have only limited value. Sometimes, students holding excellent degrees are not excellent in every day problem solving or in professional stuations. This situation is worsened by the spread mistrust due to illegal acquisition of faked or purchased degrees, what again and again is reported in public media. [1]

The high unemployment of graduates in Vietnam is an eloquent testimonial for the moaned problem of often insufficient or even useless knowledge status and professional skills of many college- and university absolvers. This is caused considerably by universities` quality deficits and their lacking willingness to meet the needs of private and public employers. [25] Many personnel managers in enterprises and public services do not trust in the examination results and certificates from universities. More and more they only recruit students after an additional qualification in specialized training institutions providing them urgently needed basic skills like independence, responsibility, creativeness, and foreign language abilities.

All these restrictions and challenges still have to be addressed and are proving that many knowledges and skills provided in tertiary institutions are not suitable for the professional challenges of a fast moving society in fierce international concurrence like Vietnam. The

obstacles to match those demands are massive, as they settle deep in the behavioral routines of teachers, and indirectly of students and their social environment. Above all, the three topics are to be addressed:

- Deep routed traditions of teaching and learning, and of unproven teacher's authority;
- The educational behavior of many tertiary teachers, who go on pursuing the old teaching methods, rigidly teacher-centered instruction and authoritarian in top-down knowledge transfer;
- Last but not least, the interest operated insistence on the privileges, provided by the traditional teacher role, as examiner and as incumbent of a socially highly respected profession.

3. Science as most advanced learning scheme

Looking for a sustainable learning strategy which the outlined university problems and at the same time the promotion of teacher training can be addressed, it appears that science itself opens the access. The fundamental rules of scientific thinking and working show that scientific practice can be seen as a very systematic and consistent teaching program [23]. Only to sketch the most basic principles:

- Scientific statements must first and generally satisfy logical basic requirements. This premise is also the essential basis for the postulate of intersubjective intelligibillity. These logical basics are common to all humans - not excluding that they can think and act against them.
- Scientific knowledge acquisition and insight is carried out principally systematic and on the basis of in theories. Only by assigning in systematic contexts structures, regularities and laws can be recognized.
- Scientific statements must be transparent and criticizeable in every step. Only so the claim of scientific knowledge can be checked for validity beyond the isolated case. In the reverse this means that closed (hermetic) systems of thoughts are unscientific. Good science generates more questions than answers, and from mistakes can be learnt at least so much as from successful answers.
- Scientific cognition is necessarily reflexive. This means that the strategies of knowledge acquisition and the cognitive progress must always be fed back to their premises. A logic error or a systematic inattention can bring into question the scientific character of a whole argumentation or chain of evidence.

These principles of any serious science are a prerequisite to all achievements of modernity. The world in which we live today and the way we shall shape our future, always rests on the outcome of scientific research in the natural sciences, the humanities and the social sciences. From the perspective of learning, *science is the most advanced form of learning mankind has developed* yet. Consistently applied this learning scheme meets all the requirements of thoroughness, flexibility, innovation and sustainability on the highest possible level. Good scientists are successful in learning. This elaborated learning competence is not limited to the particular subject in which the research has been carried out. The experience from the scientific practice of any discipline always conveys the common basic skills of all scientific experienced people, to be able to learn according to the general principles of scientific research in any problem. This finding is a major reason that in the highly developed societies all professional positions are increasingly carried out by academically trained employees. No matter what their tasks in detail is, and in which

subject they originally made their scientific experience, they all can scientifically analyze, reflect and problematize - given they have actually ever worked scientifically.

4. Sustainable teaching and learning through action research

The at the beginning described weaknesses and restrictions are only partly caused by Vietnam's situation as a developing country. As shown, they are rooted in the Vietnamese (and beyond in the whole Chinese stamped cultural area) educational tradition. Accordingly to that we need not less than a *new learning culture*, future-oriented and corresponding to the present level of science and technology as well as to the demand of the times. Against the ample experiences with more or less failed reforms such an intention has to consider the necessary strategy very carefully:

- Reforms must be implemented bottom up in single locations (university, department, subject, course etc.), and a clear action plan for all participants has to be pointed out.
- Reform has to be implemented in acceptance of the currently available conditions and human resources.
- Reform must be oriented to the most pressing problems about which nearly all persons concerned feel affected.
- Reform projects must be able to create a new studying habit which can be applied in different circumstances.
- Reform projects must have a clear potential for sustainable development. First priority is not how to achieve the targets in detail, but how to get a sustainable changes in attitudes, habits and capacity to act.
- Reform projects must take into account the different social issues, benefits and risks, conflicts among members, and how to engage all members even in arduous project sequences.
- Reform projects must identify clearly responsibilities and sanctions.
- Content-related the project has to link the project with the dominant educational objective to train scientifically soon-to-be teachers.

Action Research is a theory and methodology simultaneously, which can meet all mentioned criteria. The theory was firstly developed by a Kurt Lewin – a German and American socio-psychologist – in the 1940s . [4] His theory tried for the first time to combine social research, social reform and their sustainability under conditions of restricted resources. His starting point was that all participants in the reform must participate in a simple research program, in which all action steps are conducted like scientific inquiry. This theory associates the learning through experience approach, elaborated by John Dewey, with social action movements, aiming on sustainable reforms via behavioral change. Nowadays Action Research is an established reform and learning strategy preferably in the UK and Australia, where it is often applied in tertiary teaching [5; 22]. Pedagogical sciences have a particular affinity to Action Research . [2] Action Research has been already very effective in implementing reform projects in developing countries [21].

The theory´s special point, that distinguishes it from traditional experimental social inquiries, consists in the determining factor, that its research objects are not quasi externalized. Instead they are subjects in self-reflecting their own part of an action research project. The basic scheme describes a spiral in which each grade comprises six steps with following contents.

● A given situation is analyzed by the participants (moderated and supported by the teacher-expert) advantages and disadvantages are pondered and the purpose of the research project is clearly identified and determined exactly;

● Collecting information to be able to describe carefully the core of the research issue;

● Discussing solutions and building a tool kit to evaluate, study systematically steps for solving the problem;

● Carrying out the most promising project alternative - always under continuously reflection of the research process;

● Evaluating the achieved results together;

● Analyzing the achievements, finding new problems to be solved in the next steps.

Next attempt will enter at a higher level in the spiral and another process will begin similarly. Action Research will continue so step by step and change the problem as well as the minds, knowledge and behavior of the participants. The techniques are rather simple. The researchers do not study actions and behaviors of human objects to present the results at the end and to explain what they should do and what not. Instead, the research objects become research subjects in screening their own problem, actions to solve them and how they cope with the outcomes. By learning how to solve their own problems, the researchers will be able to improve their own behaviors with their own exclusive strategies.

Like in any other inquiring activities according to scientific principles, results can be achieved only under certain conditions. The participants must have a certain autonomy and must be ready to learn the necessary communicative skills, about the characteristics of the problem and its environment, about methods of moving systematically forward in advancement of knowledge, etc.

If the above mentioned conditions are met, at least basic criteria of sustainable reform will be satisfied - in the first instance of course only for the group or institution where the Action Research project has taken place. The results of Action Research projects firstly have only local impacts. And like all other bottom up strategies, the question of how to make the results effectively beyond the circle of direct participants emerges. As social change in general is very slow, the dissemination of the learning results of more or less small groups depends on the number of those projects, the acceptance with the broader social and institutional environment, the available time, etc. The alternative of top-down reforms has its own problems with social implementation: unwillingness, traditionalism, controversial interests, lack of understanding, etc. Both reform orientations, the participative strategy and the managing strategy, are neither opposite nor exclusive to each other. Instead they should supplement each other in order to foster the benefits of each and to minimize the disadvantages.

It is obvious that the basic approach of Action Research, to solve problems *and* behavior through practicing research on the mastering of own problems, are finding their ideal playground in education institutions in general [28] and in tertiary teacher training in particular [13]. Improving the profession by doing research is a very effective method. The spill over effect to lecturers is also very large. What they learnt in universities will be applied and expanded in the training institutions where they are working for after having been graduated. Many employees working in teacher

training colleges and universities are not sufficiently qualified in their fields and they do not receive adequate further qualification. Doing Action Research would bridge this gap, improve substantially the teaching and learning methods and modify the habitualized behavior of teachers and students into a gain of sustainable competencies by active scientific praxis instead of accumulating inert and ephemeral knowledge [11].

5. An outline for the application of action research in teacher training

Action Research provides a promising path for the reform of tertiary teacher training, to practice active and sustainable study methods, to obtain a much more higher level of professionalism, and to overcome conventional behavior with teachers and students likewise. The simple guideline of Action Research opens an easy to realize and, not at least, inexpensive reform strategy: **self-researching the own doing in improving teaching and learning methods as a scientific learning process.** The reformers are investigating scientifically their own learning experiences.

Unlike to conventional inquiry projects it is not a research task given from outside, but an issue coming from inside the group of participating students and their teacher. The action subjects are studying themselves and the research object is the own doing. The order of necessary steps in an Action Research project can be shown in brief as following:

Step 1:

Which current teaching/learning methods in a concrete study subject/course/study task are problematic from the viewpoints of the persons directly affected (students and lecturers first) and what should be changed in which direction?

Step 2:

How could new teaching/learning methods look like, how could they be carried out, how can they be to analyzed with scientific methods, and what could be a concrete and feasible reform project?

Step 3:

The reform project is carried out and simultaneously accompanied by self-research according to scientific standards.

Step 4:

The achieved results of the project are evaluated in terms of: (i) Which experiences and insights have been achieved? and (ii) Do the empirical research results reflect the passed process of the project adequately? (iii) Is there any major difference between the experience of the participants and the scientific evaluation, are there blanks?

Step 5:

What has been achieved by the results regarding the initial project goals? How can we improve the accompanying research in using additional or modified problem formulation or empirical instruments? What should be the connecting project?

As introduced briefly about Action Research projects, there are some environmental conditions required to implement such projects. Firstly, apart from the direct participation of students and lecturers, we need the supportive participation of authorities and service providers inside the university. This participation is especially important for the durability of the reform strategy. Another important prerequisite is qualification of all directly affected persons. They have to learn beforehand how to recognize and apply:

● The basic methods how to practice team activities in partial independence (the concrete targets are not pre-set, the implementation method is not regulated and there is no continuous outside supervision),

● Methods and techniques for empirical research on a basic level,

● To document carefully the project courses and to report easy to understand for everyone inside and outside the project.

The mentioned methods, instruments and techniques are easy to learn in short time on the necessary basic level and available for students and lecturers of all subject areas. By doing so, the benefits of the project will be much greater in comparison to the efforts undertaken. Thanks to their excellent learning capacity those scientifically self-learning projects have the potential to enable any institution in general and especially teacher training institutions to become a learning institution at all levels.

It is not the place here to deal with the framework conditions for necessary content elements, pragmatism and the project design. These conditions should be considered and paid attention to carefully in the Action Research project. The underlying process is analyzed in detail in the book "The Road to Improve the Reform Quality in Teacher Training Institutions" written by the author of this paper and Professor Muszynski, Potsdam University (Germany) . [18]

6. Some closing considerations

The significance for a reform of tertiary education in Vietnam in general and in teacher training in particular, can be summarized in the following way:

● Self-researching performance of reform projects suits well to developping countries like Vietnam since they can be applied under limited conditions in finances, equipment and qualified human resources, as they are given in many of Vietnam's teacher training institutions.

● The anyhow necessary resources are available since the Vietnamese tertiary teacher training institutions are established nationwide and have at command sufficient personnel, rooms and at least basic technical equipment. Not the scientific prerequisites or results are driving the learning success, the experiences from carrying out the project are important. Even errors and mistakes are fruitful learning elements, given that they are integrated into the research process.

● When such reform processes are reflected in detail through the accompanying scientific research, the whole project remains always under the command of the participants. It is their own problem, addressed and controlled by themselves, which is much better than being confronted with instructions from outside. It is an empirical fact that carrying out external motivated reform requests need much more resources and often suffer from short expiry dates.

● Action research projects also bring multiple valuable spin-off results. If those projects are implemented effectively, the reform work will bring students, lecturers, management and service suppliers together so that effective and innovative communication structures will spread over the whole institution.

● Even if these projects have not been successful in all aspects at the beginning, the mid- and long-term learning achievements are still meaningful. Finally it should be underlined again, that the purpose of the projects described above is not to create a "definitely reformed" teacher training institution but an institution with better learning capacity, able to conduct self-reforms continuously.

Behind all this it remains a final, obvious question: Why is in rich and especially scientific highly developed nations as Australia and Great Britain the comparably cheap and easy to conduct Action Research in tertiary teacher training established, while a developing country like Vietnam still maintains pre-modern, comparably expensive and ineffective teaching and learning approaches? It is not that this approved method of teaching and leaning would not be known over here. At least occasionally scientific contributions about that are published [9] and many lecturers in Vietnamese colleges and above all in universities have studied and graduated in Australia or other English speaking countries where this approach is broadened. This article suggests another assumption for the persistence of the traditional teaching schemes: Besides the continuance of proceeding simply what is usual and familiar, because almost everybody is practicing it, one grave reason could be, that flexibility and some effort for acquiring and launching this new approach is asked. Furthermore and beyond teacher's role is fundamentally changed, from instructor and examiner to moderator and often participant in a social group experiment. The consequences out of this shift are far reaching and not so attractive, perhaps even scaring for many college and university teachers. One more reason to promote Action Research vigorously.

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