

Alignment in teacher education and distribution of leadership: An example concerning learning study

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Abstract

The critical aspects distribution of professional leadership, alignment in learning and research close to practices, were lifted forward in order to exemplify a research project with learning study as an approach for alignment between teacher education and practice, and as consequence an instrument for distribution of power. The results showed that alignment of learning in a way seems to be unproblematic according to teaching and learning subject knowledge and professional and research knowledge developed. Nevertheless, problems are occurring in communication between the organizations regarding epistemological and ontological questions and the teaching and learning of subject knowledge seems to be affected. This leads to the conclusion that it is possible with improved reaching of intended learning outcomes, both for teachers and pupils, with strengthened communication.

Introduction: Leadership in society

In this presentation three critical aspects of education are lifted forward: the aspects of distribution of professional leadership, of alignment in learning and of research close to practices. The aim is to exemplify a research project, according to the mentioned aspects, with learning study as an approach for alignment between teacher education and practice supervisors' practice, and as consequence an instrument for distribution of power and leadership in teacher education and also between teacher education and practice. Learning study is an approach for developing lessons, using a theory of variation, the later described in Marton, Runesson and Tsui (2004). The expected result of a learning study is primary pupils' learning and for teacher education, systematic scientifically knowledge, developed in a way possible for teachers and teacher students to apply and distribute. In the conduction of a learning study there are similarities to action research, and action research also is a way of distributing leadership and power in an involving democratic way, see e.g. Sharmann (2007).

The meaning of learning in education is changing continuously in line with changes in society. Research with postmodern perspectives is lifting forward changes in society in multiple ways also according to education. Hargreaves (1999) e.g. is pointing out that it is hard to forecast what kind of development that will arise and what development of e.g. knowledge that will be needed. Because of the changes the concept lifelong learning were developed and this means that it is not possible for e.g. educational organizations to determine what knowledge and capabilities that will be useful in the students' and pupils' future lives.

If using Hargreaves reasoning, a consequence of lifelong learning is that the educational organizations have to make it possible for students and pupils to learn how to cope with development and to learn to judge what knowledge that will be needed to learn according to development in society. There are also probably aspects that are critical for the development of learning and knowledge in educational organizations as schools and teacher educations. Examples of such probable critical aspects are epistemological and ontological assumptions for learning, as well as awareness of learning culture and history of the organization.

The government in a society often wants to manage the educational development among others by curricula and syllabuses. When the curricula Lpo 94 (Utbildningsdepartementet¹,

¹ The Ministry of Education and Research

2006b) and Lpf 94 (Utbildningsdepartementet, 2006a) were introduced in Sweden, it was obvious that teachers' roles also were in change all in line with both pupils' and teachers' life-long learning. Madsén and Risberg (1994) lifted forward the changed and widened teacher role as a consequence of the new curricula. The authors proposed that the teacher profession should include that teachers individually should be able to integrate relevant competencies for the teacher role. In line with the teachers' responsibility for their own development, pupils' ability to be responsible for their own learning and learning process, were lifted forward.

A conclusion of the authors' propositions is that the, by politicians changed teacher role implicitly aimed at changes in instruction for the development of pupils' lifelong learning. Lpo 94 (Utbildningsdepartementet, 2006b) and Lpf 94 (Utbildningsdepartementet, 2006a) are claiming pupils' influence, also concerning the pupils' own learning. One interpretation of these claims is that teachers specifically should take notice of each individual's needs, learning and involvement and at the same time globally take notice of the needs, learning and involvement of a group of twenty to thirty pupils.

Another conclusion made in the government bill, (Regeringens proposition, 1999/2001:135) was that because of the widened teacher role teachers needed in-service training for integrating general teacher competence with subject knowledge. In in-service training according to (Nilsson, 2006) it is crucial for the learning outcome that the competencies are conceived as relevant by the teachers. According to Nilsson's investigation about competence development for a widened teacher role, teachers found it problematic to develop relevant competencies in practice on the basis of the learning offered by in-service training. Some of the interviewed teachers conceived that the in-service training was focusing too general topics without connections to subject knowledge. Teachers found it e.g. problematic to integrate subject knowledge and general educational teacher knowledge without possibilities of bridging or of transformation of knowledge. This ability of integration seems to be a crucial part of the widened teacher role.

Teacher education should also be part of the government's managing system of schools according to the government bill (1999/2001:135). The steering documents for preschool, elementary, secondary and upper secondary school should also be used as a base for the content in teacher education. The student teachers should become developers of the school with practice supervisors who were supposed to educate student teachers. The teacher education should be both professional and academic with broad pupil age spans to teach. The general educational teacher knowledge integrated with subject knowledge was also lifted forward as a way of widening the teacher role. The teacher role became also more care-taking and teachers were as well responsible for managing pupils' development of social competence in pupils' lifelong learning, all in a democratic way.

There are systematic ways of evaluating the development of the school system. The principal of each school, each year, has to send a report, grounded on an evaluation of the school regarding quality, to the school board, and the school board is gathering all school reports in the district and is sending them to the Swedish National Agency for Education.

There are also international systematic comparisons used for evaluation. In Skolverket², (2007a) the analyses of the Pisa investigation 2006 show that the results of Swedish pupils abilities in reading and mathematics have not changed much from earlier Pisa investigations

² National Agency for Education

2000 and 2003. On the other hand the Swedish total average 2006 is no longer significantly better than the average in the OECD-countries. Pisa investigations can be criticized for using quantitative measures in their comparisons, because quantitative measures are often less reliable when used for comparison between different countries with a lot of fundamental differences in the educational structures. This problem is lifted forward in Preston (2003). In spite of the critics, the Pisa investigations are in a way controlling political educational policy and Pisa investigations seem to have big impact upon educational development. In the common debate the decline in average in the Pisa investigations, sometimes is explained by pupils' individual "own work", and mentioned above.

A systematic evaluation of teacher education in Sweden 2003 (Högskoleverket³, 2005) showed that different competencies learned in teacher education and knowledge in practice were not integrated enough, because teacher students couldn't make connections between university based knowledge and practice based knowledge. Neither was there good enough progression nor integration between learning in educational sciences with generic teacher competencies and learning school subject, according to the evaluation. Consequently the student teachers were supposed not to be able to integrate knowledge and learning from the two different organizations. A new evaluation 2006 (Högskoleverket, 2008b) shows that teacher education in common has progressed in a good way since 2003, but still there are needs for better didactics in mathematics and better progression regarding educational sciences. Swedish teacher education in common are now trying to reduce the lack of alignment in teacher education and between teacher education and student teachers' practice, pointed out in Utbildningsdepartementet⁴, (2007) and (Högskoleverket, 2008b). A government committee, described in Utbildningsdepartementet (2007a) is now preparing for new teacher education programs and the directives are that the teacher education should be more differentiated according to the pupils' ages. National goals in Swedish, Swedish as a second language and Mathematics for grade three have already been developed for start in autumn 2008, and national tests in grade three are going to be distributed in spring 2009 according to Skolverket (2007b). An interpretation is that for teacher education this means that student teachers for primary school, after their exam, need to be able to teach more precisely directed to those goals.

Research about integration of general teacher knowledge and subject knowledge, has different perspectives regarding what knowledge that is conceived as most important in the integration. Lipman (2003) is e.g. claiming the importance of the general abilities as critical thinking and assessment for teachers' developing of higher order knowledge. He is also lifting forward the importance of teaching skills in thinking, reflection and critical thinking. Marton, Runesson and Tsui (2004) point to learning as general knowledge, mainly for the pupils' learning in a subject. The perspective is that learning is constructed in relation to the surrounding world. Banks, Leach and Moon (2005) are lifting forward that different kinds of general knowledge could be integrated dynamically with academic subject knowledge in construction of knowledge. Regarding general knowledge and integration with sciences and mathematics, pedagogical content knowledge is seen as integrating didactics with subject knowledge, and the knowledge often is supposed to be bridged and transformed in the process of instruction, see e.g. Appleton (2006). The results are all pointing to problems with alignment between

³ National Agency for Higher Education,

⁴ Minister of Education

university knowledge and practice and an interpretation is that elucidation of these problems is crucial in connection to teachers' and student teachers' life-long learning.

A question is still how it is possible to develop good progression and integration of knowledge and competencies between general educational science and subject knowledge on one hand, and good progression and integration of knowledge and competencies between teacher education and practice on the other. According to Biggs and Tang (2007) the alignment in an educational context ought to be good e.g. regarding syllabuses, curricula and teaching, to be an effective instrument for development of learning and knowledge. The alignment could be interpreted as a hierarchal authoritarian construction, but in Högskoleverket⁵ (2008a, SFS 1993:100) as well as in the steering documents for the school, it is obvious that higher education and school are to develop in a democratically way, e.g. by distributing power and leadership as in Harris, (2003). Persson (2003) is lifting forward that different cultures in school are part of the distribution of power. A transformation of Perssons' arguments could result in the interpretation that the different cultures at university and in school are part of distribution of power. This means as regarding the pupils' involvement mentioned before, that university teachers, student teachers and practice supervisors need to be involved in the process of alignment to make the process democratically, and to hold back not accepted non-democratic cultures to lead the development. According to Swedish teachers in school and university they are supposed to try to be good at democratic leadership both because of the claims for democracy in the steering documents and because of the Swedish country's traditions. Davies (2002) is e.g. claiming that traditions of democracy for hundreds of years, as in e.g. in Scandinavia, are a good prerequisite for really applying democracy.

The interpretation of Biggs and Tang (2007) is that alignment means that the different documents, steering the education, need to be aligned in a meaningful way so that the most general document will show general learning outcomes guiding formulation of more concrete syllabus and learning outcomes. Course descriptions should as well be a fruit of curricula and syllabuses, but also of teachers' experience and students' influence and knowledge. This process of alignment is assumed to be generally agreed upon inside university organizations or inside practice school organizations in , even if the intentions are not always fulfilled and therefore perceived as lack of integration.

Regarding the lack of bridging and transferring of knowledge between university and school it is not for sure that all actors are agreeing upon what knowledge should be bridged and transferred or if knowledge from university or school should be in balance or hierarchical and if hierarchical, in what direction. Because of the lack of integration it is also possible to assume that there are tensions in the distribution of power between university and school.

A hypothesis is that knowledge of learning outcomes could be a powerful way for the teachers to plan and direct the course and for the students to learn, both inside organizations as well as between organizations. The alignment could underpin the direction of learning, but this underpinning process needs to continue at a more detailed level in the planning of instruction and during the instruction. The continued alignment through e.g. a learning study could be a way of a democratically considered alignment covering both higher education and school from steering document to learners at different levels.

⁵ Swedish Higher Education Ordinance

In order to investigate if the hypothesis is true, a research project involving learning study started at Halmstad University 2007. A specified aim with the learning study project was to investigate and make visible which aspects of general educational teacher competencies that are used by teachers and later on teacher students, when planning and instructing in learning study in the school subjects mathematics, Swedish, civics and sciences. This project is only involving math teachers from praxis and teacher students will be involved during the autumn 2008.

Description of the context of the research project

According to the before mentioned changes in society, both Swedish teacher education and the school practice had started to change in postmodern, unforeseeable ways around the year of 2000. The process was also observable at School of Education the University of Halmstad where I taught as a university teacher from the year of 2002. After the start of the teacher education 2001 I took for granted that practice supervisors knew about what student teachers were learning in teacher education and what goals the student teachers were going to reach. The practice supervisors were before 2001 teachers for the pupils and less for student teachers, without responsibility for the student teachers learning. The student teachers followed an experienced teacher and learned from the “master” teacher by observing and imitating. In teacher education, instruction of learning was not lifted forward in university courses. After 2001 it was supposed that student teachers should be educated in instruction both at the university and by the Activity placed education teachers, the name showing them as *teachers* for student teachers practice. At the university it was written in the curricula and syllabuses what was expected to be taught in different courses. In spite of the steering documents, in the evaluations the teacher students criticized that the progression between university courses and practice were not good enough. Teacher students claimed that the practice teachers not seemed to be familiar with the content in the syllabuses.

In an investigation at School of education at the University of Halmstad, Bengtsson (2007) surveyed practice supervisors’ and student teachers’ valuation of the practice in order to gain knowledge of needs for improvements. It was clear that the communication between teacher education and practice supervisors about e.g. syllabuses in teacher education needed to be improved. The practice supervisors had not much time for communication with teacher education and as well they were not familiar with the language in the syllabuses. A 7, 5 credit course for practice supervisors developed, and the practice supervisors were better informed about the teacher education, facilitating how to find and understand syllabuses with the student teachers’ goals in Educational sciences and in the subject. As Halmstad University adapted to the Bologna system in autumn 2007, it probably has become even easier for practice teachers to find out about the student teachers’ expected learning outcomes. Practice facilitators and student teachers have also been involved in development of new syllabuses. As an example of trying to reduce the perceived lack of alignment in teacher education and school practice there are also three critical aspects lifted forward progressively in the syllabuses in Educational sciences at School of Education : professional leadership, learning and research. The aspects are formulated in a broad way, not too firm to hinder changes in politics of education and other changes in society.

The learning study

In the learning study, five secondary school teachers participated together with their principal, two university teachers and I as a researcher in Educational sciences. The learning study

included formulation of a learning object, construction of a test used as pre and post test. The teachers planned three lessons that were videotape recorded, analyzed and improved. The lessons were carried through in three classes in grade 6. The teachers participated in a course in learning study arranged by the University of Gothenburg and the examination consisted of written reflections and the writing of an article in a Swedish journal in mathematic didactics. The article is supposed to be published during autumn 2008.

Before the learning study course, four of the teachers were interviewed about their conceptions of general teacher knowledge and subject knowledge. Two in depth interviews were also conducted about the content in the general educational area in teacher education.

During the course the teachers had possibilities to decide about the learning object and the learning object became “subtracting fractions from wholes”. The learning object in a learning study has similarities to the formulation of a research problem. The teachers also constructed the test, with advice from the university teachers. After the learning study the teachers told that they had thought that the learning object was too wide for a 60 –minute lesson, but the group decided not to change the learning object. In the learning study a theory of variation was used, see Runesson (2006), and the teachers had to find out critical aspects lifted forward to make the pupils learn the intended learning object. The critical aspects in lesson one were that one whole has to be divided in similar parts and difference between nominator and denominator. In lesson two the critical aspects were to use fractions with more than one whole and to know when a fraction is less than one. In the last lesson the critical aspects were to know if a fraction is more or less than one and to know how much more or less the fraction is compared to the other.

The learning study showed apparently contradictory results because in the first lesson the test scores increased most, 11 percent units, and in the last lesson the test scores increased 10 percent units, as showed in Table 1.

Table 1. Total frequency of solutions of tasks in class 6 A, B and C.

Task	Post- Test	Pre- test	Com- ments	Post- test	Pre- test	Com- ments	Post- test	Pre- test	Com- ments
Class	6A	6A		6B	6B		6C	6C	
Pupils	23	23		22	22		19	19	
Total credits.	253	253		242	242		209	209	
Class' credits	198	170		145	146		155	133	
%	78 %	67 %	+ 11	60 %	60 %	0	74 %	64 %	+10

However in class 6 B the test scores increased with 41 percent units in one task⁶, treating the critical aspect to divide a whole in similar parts. Learning study is not as strict as an experiment and there are variables that not are controlled, se e.g. Holmqvist (2006). That means that it is not possible to make casual conclusions. The teachers were aware of this problem and explained that class 6A was as a class with more clever pupils than class B and Class C. Anyhow, this does not explain the lack of general increase in class 6 B.

Conclusion

Critical aspects of education were lifted forward at different levels in this research project. At the research level distribution of leadership was lifted forward and the elucidation of this aspect showed the need to develop more systematic decision making processes in cooperation between university and school practice. The aspect alignment in learning seemed to be more consistent regarding bridging and transformation, but lack in the decision-making seemed to affect the alignment. The last aspect, research close to practice seemed also to be consistent and the participating teachers have been involved in the research process and have also contributed to research knowledge by a research article. Using the reasoning in Sharmann (2007) it is possible to call the learning study action research.

At the educational level the critical aspects of leadership, learning and research related to the syllabuses at the university level and to the curricula for school teachers. According to the aspect leadership this was a research project in line with the interest of the research milieu at School of Education as well as in line with the Local board of Schools. The aspect learning was connected to alignment in learning through interviews with teachers according to the syllabuses at university and steering documents for school. The aspect research was in a way token for granted regarding epistemological and ontological assumptions at the educational level and systematically reflections might have led to more effective decision making at the research level. In all, at the educational level the critical aspects seemed to be least critical, probably because they were not made enough visible.

The critical aspects in the leaning study seemed at a first glance to be independent of the other levels, because they are closely related to subject knowledge in mathematics. Concerning the content in the learning object it is so, but in the process of analyzing and differentiating the critical aspects the epistemology, ontology and leadership will most likely have impact on what critical aspects are lifted forward. What critical aspects that are lifted forward are, as shown in the learning study, fundamental for pupils' learning.

The results of the learning study should show if the pupils had learned the intended learning object and if the teachers had lifted forward the necessary critical aspect for the pupils learning in line with Runesson (2006). A reflection is that the analyses of the pupils' tests were carried out on a group level and on a task level and ought to be carried out on an individual level for each pupil. An analysis for each individual would show critical aspects connected to each pupil and all critical aspects in a class. All the critical aspects could be used in instruction for individuals, small groups and whole classes in a more powerful way. It is possible that the wide learning object has affected the pupils learning. The teachers did not in

⁶ Not visible in the table

a full range use the opportunity to influence the constructing of the learning object in the group process when the learning object became too wide. The teachers, as well as university teachers and researcher need to develop better group decision processes and use distributed leadership as Harris (2003) is lifting forward. It could be cultural aspects, see Persson (2003) that influenced the group's ability to make good decisions. On the other hand the teachers easily analyzed critical aspects relying on their experience, literature and advices from university teachers. The result showed that the learning object was not always clearly lifted forward and then all the intended learning did not occur. But the result also showed that the learning object that actually was clearly lifted forward during a lesson resulted in pupils' learning, although it might not be the intended learning object. For student teachers it would probably be a good way to be involved in the reflection work of an experienced teacher and a possibility of bridging and transforming knowledge. Of importance will be development of competence in decision making.

During the analyses and reflections in the learning study the teachers seemed to integrate general teacher knowledge and subject knowledge and learning study seems to be a way for developing alignment between teacher education and practice according to Biggs and Tang (2007). The teachers were using knowledge in mathematics and critical thinking according to Lipman (2003) when they were formulating the learning object and analyzed the critical aspects. The teachers told that the use of the theory of variation was a new way of thinking compared to variations in methods. Marton, Runesson and Tsui (2004) are lifting forward that this shift in perspective is crucial for the teachers' competence development.

The teachers also used general teacher knowledge in the reflections according to democracy, showed in discussions of the pupils' behavior and of the test questions regarding gender and ethnicity, but not in a systematic analytical way as according to subject knowledge. Competencies that the teachers showed where the ability to analyze lessons and in the analysis after the lessons the teachers showed the ability to use theory of variation in the planning for the improved lesson and during the lessons. In this process the teachers tried to figure out all the critical aspects necessary for pupils learning.

According to Nilsson (2006) it is important for teachers' learning that the teachers conceive the knowledge as relevant. The teachers' competence development resulted both in professional and research knowledge, and this will be shown in a published article that will be visible for the teacher profession and researchers in Sweden. In the learning study the research knowledge became relevant for development of new knowledge. In sum the conclusions are that distribution of professional leadership has possibilities to develop with the power of learning study. Learning study seems to have possibilities to facilitate alignment and learning between teacher education and practice supervisors, that is, between research and practice. The approach seems to underpin both the learning of teaching and cooperation. The pupils' learning seems to need that good cooperation processes are developed between all participants in a learning study. Continuing research will give more consistent results regarding the student teachers' possibilities regarding if learning study is a way for bridging and transformation of educational sciences and subject knowledge into practice.

Tables:

1. Total frequency of solutions of tasks in class 6 A, B and C.

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