*Teaching Tip*

# Systematic Personal Training by Letting Students Teach Each Other

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## ABSTRACT

During the last three years an intranet-based strategy for active learning has been incrementally developed and evaluated at the Department of Computer and Systems Sciences at Stockholm University. The strategy has been evaluated with over 700 students in ten courses and in interviews with eight teachers. In the last and largest evaluation of the strategy 95 % of the students were positive to using the strategy, 91% liked using it, and 88% would recommend the strategy to be used on a large scale in university education.  The method makes it possible for all students in a course to receive personal training on all parts of the course curriculum. Our method presents a unique combination of Active Learning, Peer teaching and eLearning.

**Keywords**: Peer teaching, Topic Experts, Active learning

## 1. INTRODUCTION

Efficient learning is only possible if the students are motivated. Therefore, it is crucial that the students' demand for new learning methods are taken seriously and that stimulating learning methods are continuously developed. A knowledge network on an intranet can be available 24 hours a day from anywhere in the world, but to motivate the learners to use such a system, we believe that it is necessary to combine it with face-to-face meetings. We propose a specially designed seminar that allows students to receive personal training from the other students on the course. These seminars will also help the students to develop their communicative skills.

In a traditional learning situation the students only present their knowledge at a final exam. In the recommended learning method, the students continuously share their knowledge with each other both in an online knowledge network and in face-to-face seminars. This supports the students in their creation of new knowledge. When using this method the students become actively engaged in the production of knowledge and not only in the consumption of knowledge.

## 2. A DESCRIPTION OF THE METHOD

The method is carried out in the following steps:

1.  The teacher divides the curriculum into as many parts as there are students on the course. Dividing the theoretical scope of a course into smaller parts has the advantage that the responsible teacher can design the scope of the course him/herself and is not dependent on a particular course book.
2.  Each student is assigned a part of the curriculum. The students have to find material for solving the task themselves for example from libraries, the Internet or by interviewing people.
3.  The students are instructed to represent their part of the curriculum as a stand-alone knowledge object. A standard syntax is to be used when describing the knowledge brought out.
4.  Groups are formed containing approximately five of the individual parts of the curriculum (like chapters in a book).
5.  The students receive feedback on their knowledge object from the other members of their group. The group is also responsible for

guaranteeing that all individual parts are correct and of a certain standard.

6. Each group is asked to produce an introduction to their "chapter" where they relate their individual works to each other's, to provide the reader and user of the knowledge network with an overview.

7. All knowledge objects are published on an intranet and linked together to form a knowledge network.

8. The students can test their own understanding of the course curricula by using the knowledge network as an eLearning system since all students also provide test questions to their knowledge object.

9. The network is complemented with a seminar. In the seminar the students act as personal trainers to each other, each student being the expert on his/her particular part of the curriculum. During the first part of the seminar half of the students act as trainers for the other students and during the second part the roles are switched.

10. The trainers and the trainees form partnerships in "micro-sessions" until each trainee has had a chance to be trained by all of the trainers. Each training session may last between one and seven minutes depending on for how long the two students wants to discuss this part of the curriculum.

11. In each session between two students the following steps are carried out:
    o The trainer asks questions concerning his/her part of the curriculum. The trainee provides answers.
    o If an answer is not correct the trainer supports the trainee both in understanding the knowledge and in presenting a better answer.
    o If the trainee wants to elaborate on any topic there can be a dialogue where the trainer answers any questions the trainee might have.
    o When both trainer and trainee are satisfied the trainee moves on to find a new knowledge-sharing partner.

This seminar can also be combined with poster presentations held by the different groups. As each student repeatedly teaches the same knowledge over and over to all other students individually, the trainer quickly becomes quite professional in explaining the essence of his/her knowledge object in a pedagogic way. The personal trainers have to adapt their teaching to the present situation with every student and the student gets a personal one-to-one session with the group's expert on a specific subject. The trainer will also increase his/her knowledge on the subject by having parts of the knowledge object questioned by other students. Teaching a subject is believed to deepen a person's cognitive understanding of it. Since the online knowledge network can be recycled, the quality of the network will improve

each year and be continuously updated. This is a great advantage when teaching Information Systems, since few printed books can present a similar frequency in updates.

## 3. CONCLUSIONS

The learning method has been highly appreciated on all courses it has been used on. A majority of students thought the knowledge network was an excellent replacement for a course book and some students believed that the fact that each student had to interpret a subject him/herself and place it in a context had facilitated learning. The students also appreciated the way they had to actively search for information themselves. The seminar where the students taught and trained each other was believed to have increased the understanding of not only the individual subjects but also the relation between them. Most students found the seminar very rewarding. Some believed that since they knew they were going to train and teach others, they went to a greater depth in learning the subject than if it would have been only a hand-in exercise.

The method has been appreciated by all teachers using it and has received some international attention and positive feedback when presented at various conferences in Europe and the United States. Teachers who have tried the method believes that it lessens the administrative burdens surrounding a course and that it improves the students learning as well as the quality of the course.

The last evaluation of the method involved 220 students who had all tried the method and 95 % of them were positive to using the method, 91% liked using it, and 88% would recommend the method to be used on a large scale in university education.

The fact that all students become experts on a certain subject is also believed to motivate the students. Even students who might usually not perform so well will, by using this method, get the chance to share his/her expertise and train other students, since each student is made an expert on a certain part of the curricula. The fact that each student will be part of a group and will relate his/her contribution to the group members' contributions will help the student to create an overview of his/her knowledge and relate different part of the curricula to each other. The knowledge is elaborated and consolidated. The group members give each other feedback and support, which will enhance the collaborative climate in the course. Furthermore, the student's pedagogic skills are developed, which is likely to be an advantage in every future learning, teaching, or collaborative situation. The students also learn to adjust to the basic requirements on how to represent knowledge in a knowledge network. This will increase their general competence in creating descriptions for the Internet, which in turn will facilitate other kinds of eLearning projects.

We believe education should take responsibility in helping students to improve their ability to communicate their knowledge as well as being able to use it and using this method does that. Our experiences tell us that by letting the student participate in the production as well as the teaching of the knowledge needed to pass a course his/her learning is improved and the teacher's burden during the course is eased. Most of all the students appreciate the amount of interaction and feedback the method allows. One single teacher cannot possibly give all students the same amount of one-to-one training as this method provides.

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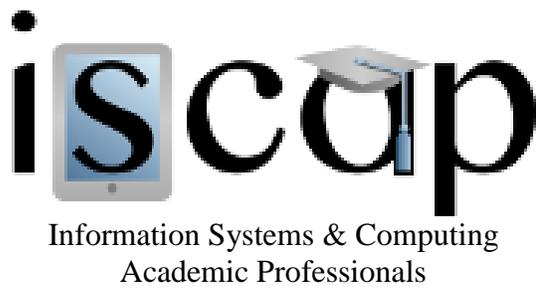
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