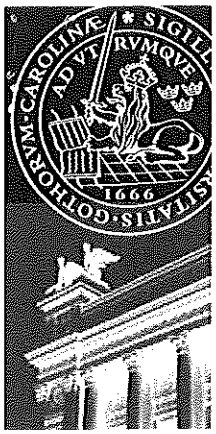

Teaching and learning portfolio

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1. Teaching and learning philosophy

My teaching philosophy is based on establishing active learning environments which provide students with in-depth knowledge and skills, and critical and creative new ways of thinking. In my opinion, an active learning environment which promotes discussion and debate, and which questions the opinions and viewpoints of fellow students and teachers is vital in providing the students with advanced reasoning skills.

My teaching philosophy also rests in providing students with motivation, encouraging participation, and making students take responsibility for their learning process. Two teaching activities I consider important in creating engaging and active learning settings are assessment and feedback. Assessment and student learning are inextricably linked (Hargreaves, 1997; Rust, 2002). I strongly agree with Biggs (2002) that *what* and *how* students learn depend to a great extent on how they think they will be assessed. I see assessment as an important tool for learning, which I use to encourage and motivate students. Providing feedback to assist students in their learning process is a fundamental teaching activity. I agree with Brown et al. (1997) that feedback is most effective when it is timely, perceived as relevant, meaningful and encouraging, and offers constructive suggestions for improvement which are within a student's grasp. For me, feedback is also a formative assessment providing students with the feeling that they are making progress, which improves their motivation to learn. To improve and complement feedback, which focuses on the past, "feedforward" is an important teaching activity for me. By giving students suggestions and ideas for the future and not only on the past, I try to further engage them in their learning process.

Another central aspect in my teaching philosophy is to "see" the individual student. All students are unique and have their own learning style (Honey and Mumford, 2006). They also have different previous knowledge and experience of the subject taught. It must not be forgotten that students have different learning goals, abilities and interests. Therefore, in order to try to reach and connect to all students I use a variety of teaching methods and approaches.

Based on the above description of my teaching philosophy there are two teaching principles which I need to highlight, even though I consider them as fundamental. Teachers and students must have respect for each other. If students spend their valuable time and money getting higher education, teachers must make sure that students gain the knowledge and skills needed to succeed in industry or academia. Another fundamental aspect of my teaching philosophy is to be open-minded, especially as regards dealing with different viewpoints and opinions which may arise in discussions. As I want my students to learn critical and creative new ways of thinking, not merely accept what is presented, being open-minded to new ideas and solutions is a basic, but important, principle in my teaching philosophy.

1.1 Teaching approach

Depending on the learning setting (e.g. type of course) and the student (e.g. Master's or PhD students) I have different teaching approaches. In courses, my main and dominant teaching approach corresponds to Fox's (1983) travelling theory of teaching which views learning as a journey where the teacher is a guide. In this analogy, the student is a fellow traveller and I, as guide, provide the students with a map and compass, point them in the right direction and leave them to some degree to their own exploration. Having clear short-term and long-term goals in their journey is important. It is a journey of exploration, not a direct trip from A to B where I am the bus driver. In my guidance, I provide students with tools and equipment for climbing, or digging tunnels through hills and mountains or whatever the terrain is. Moreover, on the map I set out where we all (students and teachers) should camp for the night (i.e. milestones). At the

camp we gather and exchange information about what we have experienced and learned during our journey so far (feedback) and what we expect to experience tomorrow (feedforward). Exploration is a personal activity which requires motivation and responsibility. If students feel lost or if motivation is not found, my door is always open. I also try to motivate students to participate in "compulsory" teaching activities by explaining the role of the activity for their learning (I do not have any compulsory activities). I believe that forcing participation does not foster learning. Getting students interested and motivated is a better strategy for me. However, I, as guide, have the responsibility to continually monitor students' progress and provide them with feedback so they can continue to improve.

My approach for supervising PhD students is slightly different since they learn how to do research. Nevertheless, I would characterise my approach as using Fox's (1983) travelling theory of teaching. However, my role is not that of guide. It is more passive; as a travelling companion. I tell my PhD students to "View me as a passenger in a car you are driving. I will give you directions I think are the best way towards your goal. If I think you have taken the wrong turn, I will tell you that. If you are driving too fast or too slowly, I will also tell you that." The same goes for my own learning process which means that I am always on a journey of exploring new terrain when I teach and do research.

Even though I consider myself as guide or travelling companion in students' learning processes I have several teaching roles. Some of them are those of expert, role model, problem solver, sounding board, discussion partner, or a just a person in a team. Once again, it all depends on the learning setting and the need of the individual student. Adapting to the needs of the students is extremely important.

2. Teaching subjects and responsibilities

I teach and do research in Packaging logistics. Packaging logistics is a novel subject where the research can be characterised as applied and multidisciplinary, with strong connections to Packaging engineering, Supply chain management and logistics, Product development, and Innovation. My main teaching workload is that of the two courses Packaging Logistics (MTT215) and Simulation of Packaging and Logistics Systems (MTTN10). However, my teaching responsibilities also cover activities such as individual courses for PhD students, Master thesis supervision and PhD supervision. I am director of studies at the division of Packaging logistics, where together with the directors of studies at the five other divisions in the department of Design sciences I develop common strategies and put those strategies into practice. Furthermore, with Ingela Elofsson, Johan Marklund and Andreas Norrman I am responsible for the "Logistics" specialisations on the Mechanical (M) and Industrial (I) Engineering programmes.

The courses Packaging Logistics and Simulation of Packaging and Logistics Systems constitute 7.5 hp each and are on an advanced level for students in their fourth or fifth year. The majority of students are from the M and I programmes, but as the course is held in English several exchange students also take the course. Approximately 35-40 take the Packaging Logistics course every year while only approximately 15 students take the Simulation of Packaging and Logistics Systems course. Both the Packaging Logistics and the Simulation of Packaging and Logistics Systems courses are based on project-based learning. The projects in the courses are realistic and carried out in close co-operation with industry. Moreover, they are based on unique problems which drive the student to investigate the central concepts and principles in the courses.

2.1 Packaging Logistics, MTT215

In the Packaging Logistics course the main learning outcome for the student is to be able to evaluate and improve a current packaging system from a packaging logistics perspective. To reach this they need to understand how packaging systems influence supply chains and vice versa, i.e. packaging logistics. Each project group, consisting of 3-4 students, "randomly" gets an existing product where their tasks are to describe the existing packaging system, map the supply chain, evaluate the packaging performance, identify potential improvements, and finally suggest a new packaging system. This provides students with the skills of analysing, designing and selecting packaging system components based on the needs and requirements of companies and other organisations in supply chains. To support the project, lectures given by packaging and logistics professionals from various companies and industries and researchers within the field, are available. Packaging analysis tools and software are also introduced. Moreover, feedback seminars are continuously held during the course. Students also participate in a classroom-based case study and visit a corrugated board factory.

2.2 Simulation of Packaging and Logistics Systems, MTTN10

The main learning outcome in the Simulation of Packaging and Logistics Systems course is how to carry out a simulation project in real life. This provides students with the skill of analysing complex systems, especially packaging and logistics systems, by the use of discrete-event simulation models. Students have to find a real simulation problem in industry, or society, and solve that problem by carrying out a simulation project. Computer-aided lectures are held during the first period of study where individual students and I jointly carry out simulation exercises in order for the students to learn the simulation software and different ways of thinking when they develop discrete-event simulation models. To support the simulation project, which is carried out in groups of 2-3 students, feedback seminars are held during the project. Moreover, guest lecturers from companies which use simulation are regularly available, thus providing the students with real examples of *how* and *why* industry uses simulation in practice.

3. Student learning examples

Achieving an active learning environment, effective assessment, providing feedback, and fostering co-operative learning are key activities in my teaching philosophy. In this section I will describe examples of *how* and *why* I have dealt with these activities in practice. Moreover, I will discuss the outcome of working with these activities over time.

3.1 From projects to project-based learning

In 2007 I was given the responsibility of teaching Packaging Logistics. My PhD thesis was entitled "*On the interactions between packaging and logistics*" so I was very keen to teach students and was very confident about the subject. I also had insights into the course curriculum and the students' profiles and attitudes since I had been lecturer and supervisor in previous years. Given this background, my colleague Henrik Pålsson and I questioned how students learned the subject; we saw a need to redesign the whole teaching- and student learning approach. At the time the curriculum was based on traditional lectures which "inserted" knowledge, a class case study, a small project on a specific topic, and a traditional written exam at the end. We concluded that the quality of learning was not that of the higher levels of Bloom's taxonomy; synthesis and evaluation. Moreover, the quality of the project was relatively low since the project was "school-like" where students wrote about a specific topic and did not actively solve any real problems. In addition, the project was peripheral to the curriculum and not something which was assessed. Basically, the curriculum was acceptable but the student learning process was not. Hence, a new

teaching- and student learning approach was needed. We needed to generate an active learning environment.

To proactively achieve an active learning environment several student-centred teaching strategies are available. Project-based learning is one well-known example of an active learning environment which focuses on co-operative learning and learning through experiences (Solomon, 2003). Henrik and I quickly found that introducing project-based learning would make students more active in their learning process. According to Thomas (2000), projects need to focus on a problem which drives students to encounter and struggle with the central concepts and principles of a discipline. To do this, we introduced projects where, in groups, students co-operatively evaluate and improve existing packaging systems from a packaging logistics perspective. In order to eliminate rivalry between project groups and instead facilitate communication and dialogue among all students, each project group was given a specific product, such as Danisco granular sugar or a Star Wars Lego toy; all the products have unique supply chain requirements and requirements on their packaging system. By making students carry out a "real" project in close co-operation with industry we aimed to actively involve the students and make them the drivers of an investigation.

The investment in introducing project-based learning paid off. Not only were the students more active individually, in project groups and in the class they also took on greater responsibility and a more active role in their own learning, as they were the drivers of the projects. Similar to Brush (2002), I also found that co-operative learning can improve student participation. In the project students constantly gain understanding of topics and concepts presented in lectures and literature, and evaluate whether these are applicable to their project problem. Within the project group students discuss the topics and concepts and jointly decide on what to apply and what not to apply to their problem, i.e. this illustrates co-operative learning. As the project is carried out in co-operation with industry, students also learn how to deal with reality, how to make contact with a company, how to overcome difficulties in collecting data, how to deal with lack of data, how to work in teams etc. This result in students developing deep levels of understanding, as well as problem-solving and communication skills which help them both in academia and their future workplace (Thompson, 2007).

I would argue that the students' learning outcome resulted in high-level synthesis and application of the packaging logistics concept. I am always impressed by students' project results and find it fascinating how well they have carried out the project. Students come up with all kinds of creative and innovative ideas, from radical ones to simple and effective solutions. I often think that I would not have been able to solve matters as well as the students, i.e. they have surpassed their teacher! To communicate and share students' results I am in the process of writing a book where student results will act as illustrative case studies of the potential of packaging logistics.

When reflecting on the introduction of project-based learning, I see that the major aspect changed was not the curriculum itself, but the approach to learning and teaching. Similar kinds of lectures which was held before the introduction of project-based learning in 2007 were also held in 2009, but the aim of the lectures was not to "insert" knowledge but to serve as input to the students' project. However, to support the introduction of project-based learning a change in assessment mode was needed (see section 3.2; Combining assessment modes). Moreover, a structured way to provide feedback to the students was needed to secure the development of the project (See section 3.3; Feedback seminars).

3.2 Combining assessment modes

Student assessment is an important tool for learning, and one which can be strategically used in a learning environment to ensure better learning outcomes. In the introduction of project-based

learning, assessment was found to be a major challenge. Before the introduction, the Packaging Logistics course basically had a conventional written exam at the end of the course. This assessment method does not support students' understanding and skills acquired from project-based learning (Moti and Abigail, 2004). Having an individual written exam would probably cause the student to focus on what they need to understand to do well in the written exam and not on the group project which is central to the curriculum in project-based learning. Moreover, I consider a written exam more as a control function rather than a learning activity as exams often do not provide any more valuable feedback to students than what grade they have achieved.

As a result, I proposed a "new" assessment mode to my students, one consisting only of an assessment of the group project. In discussions with the students it was clear that they also saw the need for group assessment of the project, but they insisted on having an individual written exam. The students' reason for having a written exam was not *learning*, but getting a fair individual grade. Based on the discussions with students I decided to assess them by grading the group project and by also having an individual written exam. To direct the students' focus on the project, a student's final grade was approximately 60% based on their project work and approximately 40% was based on the written exam. The written exam was redesigned to better assess the understanding and problem-solving skills students gained during the project. For example, no factual knowledge is dealt with in the written exam, and the course literature (two books) can be used during the "open books" exam. Why an approximate percentage is given is because I use a system perspective, i.e. the performance of whole system (final grade) does not have to be equal to the sum of the performance in system components (project and written exam grade). The non-linear relation is also needed so I can enforce, and make sure students achieve, the learning outcomes for a pass grade.

During the spring term of 2009 I took the course "Examination" where together with my colleagues Annika Olsson and Fredrik Nilsson I did action research on assessment; this resulted in the paper *Group assessment challenges in project-based learning - Perceptions from students in higher engineering courses.* When doing the literature review for the paper I got the idea from Van Der Vorst (1996) to award the group with a group grade multiplied by the number of group members; to be distributed among the group members by themselves. This method was introduced in the Packaging Logistics and the Simulation of Packaging and Logistics Systems courses in 2009. In discussion with students they found this peer- and group assessment to be a good idea. At the end of the courses students informed me that the new grading system probably created more project motivation and responsibility for some students, and that I should continue with the combination of assessment modes. However, from a total of 16 groups only 2 groups distributed the given group grade differently among members. I feared that peer assessment could be a source of conflict in groups, but instead it proved to serve as a useful tool to solve group conflicts. One potential assessment change for 2010 is that I might introduce oral exams for those students who have difficulties in writing or expressing themselves in the written word.

3.3 Introducing feedback seminars

Feedback and feedforward represent a fundamental and vital teaching function. Providing feedback to students is a type of formative assessment where students should feel free to reveal their ignorance and the errors in their thinking. Biggs (2002) emphasises that formative assessment results should not be used for grading; if so, the student will be highly motivated to conceal possible weakness. Based on my experience as a teacher and my previous experience as a former Master of Science student at LTH, courses with some form of group project activity often provide feedback through constructive discussion with a supervisor. With the same approach I "traditionally" gave each project group in the simulation course a supervisor who would provide the groups with feedback. One aspect students raised was that some supervisors were "better" at

providing feedback than others; this produced "unfair" feedback. To tackle this the easy way I decided to handle all the feedback myself. However, I quickly realised that this was not right approach. I needed to create an active learning environment where students are highly involved and drive learning activities such as feedback.

To improve feedback to project groups and at the same time create a more student-active learning environment, I have introduced feedback seminars. Feedback seminars are scheduled throughout my courses and are organised to serve as project milestones where students present a part of their project in the form of a written paper and an oral presentation. They are then given feedback from the whole class and me. One or two days before the feedback seminar all the groups have to electronically upload a seminar paper to Luvit. Each seminar paper deals with a specific and predefined theme based on previous course lectures and literature. The paper is basically a major part of the final project report so it is highly relevant and not perceived by the students as an extra activity in the project. When the papers have been uploaded, I read them, summarise all my feedback, and plan which groups should present their papers and what general feedback I am going to give these presenting groups. 4-5 groups are able to present at each feedback seminar which lasts 2 x 45 minutes. The students do not know which groups are going to present so all groups need to prepare and be ready to give a PowerPoint presentation at the feedback seminar.

At the feedback seminar the student groups present for 10 minutes and are given spoken feedback and asked questions by the class and me. Even though each project is unique the feedback to one group is relevant to all the projects since they all deal with similar problems and concepts. This makes students more motivated in listening, discussing and trying to understand other projects. This would not usually be so interesting since students primarily focus on their own project and on the feedback *they* received. In my feedback I try to complement other students' feedback, and focus on giving guidance and advice with a positive attitude. For example, if a group of students presents the results of incorrectly applying a tool to a problem, my aim would be to make the other students identify, and describe to the group, what is incorrect and how the tool could be applied. I would then complement student feedback by mentioning to the whole class the groups which have applied the tool in an outstanding manner. I would then ask those groups to elaborate on how did they did it, why they did it that way and what was the result. After the feedback seminar students then download seminar papers from Luvit in order to get new ideas, inspiration and insights into different solutions to their project.

From my perspective, the value of feedback seminars is that they provide timely, continuous and multidimensional feedback. Feedback is from both teachers and students, is based both on an oral presentation and written paper, and is not only directed to the project group itself but to all groups. The additional value of feedback seminars is that they function as project milestones which strongly encourage students to continually keep up with the course schedule. This reduces the risk that students do not participate actively in the first weeks of the course, which is a well-known behaviour of many students.

My role as a teacher becomes more that of a feedback organiser, setting the scene for the class to openly and constructively discuss the projects, rather than being the exclusive source of feedback.

One major challenge I always face is getting the right class atmosphere. My courses are held in English which drastically hampers discussions and dialogues among students. One way I found is effective to "break the ice" and promote a positive atmosphere is to offer students coffee and tea. Another challenge is getting the students to take responsibility for receiving and acting on feedback. Not all students are capable of this. However, as a project is carried out in groups, the group itself nearly always handles this well; i.e. co-operative learning in action.

3.4 Facilitate co-operative learning via group formation

Project-based learning in groups is an effective teaching strategy for co-operative learning. Co-operative learning involves peer learning in which there is interdependence of group members in working towards a common goal (McKeachie, 1999). However, getting a group of students to work together as a team is not easy. One element I have directed my attention to is the formation of the teams. I argue that in project-based learning, group formation is a key element in order for students to benefit further from their learning.

In the Simulation of Packaging and Logistics Systems course I have traditionally had self-selected groups. However, after monitoring the success and failure of different groups and during discussions with colleagues I realised the need to form groups on the basis of gender, ethnicity and skills in order to promote co-operative learning. Self-selected groups are often composed of a group of friends, often with similar opinions, so it is better (with respect to learning) for them to work with students whose abilities and ideas are different from their own. I noticed in discussions and project results that the result of eliminating self-selected groups improved student learning. However, I also noticed, and some students pointed out, that some students did not want to participate as much as others and this caused conflicts within the groups.

As a result, I currently form groups primarily on the basis of student ambition, i.e. the students in a group have the same level of ambition. Before I personally form the groups, I tell the students to take an active decision on what level of ambition they have on the course, i.e. good, excellent or outstanding. Each level is clearly described to the students and I emphasise that this does not affect the grading, type of feedback they will get, etc. The sole purpose is to form a group of students who will evolve into a high-performance team. Based on level of ambition I then form groups on the basis of gender, ethnicity and skills.

The outcome has been positive in two ways. Firstly, when students meet their team members for the first time they are already allied and have a joint goal to achieve; this makes them quicker to start work on the project and creates a tighter team with less irritation and conflict among group members. Secondly, many students found it useful to reflect upon, and take an active decision on, what level of ambition they have in the course. This was not the usual case, as learning ambition is often an outcome of various course and social aspects.

4. Scholarship of teaching

My knowledge in teaching can be derived from active experimentation and reflection on personal experience. However, there are several other important sources of my teaching knowledge base; pedagogical courses, relevant literature, discussions with colleagues, and participating in teaching seminars and conferences. Moreover, I share and communicate my knowledge about teaching through publishing and presenting papers at conferences. According to Kreber (2002), the latter activity is a way to validate my teaching knowledge.

"Co-evolution" is the first word which comes to my mind when describing my knowledge development in teaching. My wife is a dedicated undergraduate teacher; my colleagues have great pedagogical interests and enthusiasm; the department and faculty encourage pedagogical development initiatives; and the students are high achievers with high levels of interest in learning. Thus, in such environments where I constantly interact with people who discuss, exchange and share teaching insights gained in practice, from literature, pedagogical courses, conferences and so on, I automatically acquire and transfer teaching knowledge.

To advance my teaching and learning skills I find participating in seminars and conferences invaluable. Since 2006 I have participated in the annual "Educators' day" which is held in

conjunction with the major Nordic logistics research conference, i.e. Nofoma. At the Educators' day professors, senior researchers and teachers within the logistics discipline from various international universities meet and share viewpoints and insights into a teaching theme. For example, last year at Jönköping International Business School the theme was Lifelong learning and discussions lasted until late in the evening. However, I also participate in pedagogical conferences which I find more inspiring since they go beyond the logistics discipline. So far, I have presented two papers at two different pedagogical conferences.

In the peer-reviewed conference paper "*Creating an interactive learning environment: Experiences of using a student response system*", presented at 5:e Pedagogiska Inspirationskonferensen 2008, Ola Johansson and I discuss the rationale for using student response systems, or "clickers", and share our experience of using the teaching technology in training sessions. Student response systems are powerful tools, especially in large, lecture-based classes, to enable active interaction between students and teacher, and among students themselves. After the presentation I was contacted by many teachers from various faculties throughout Sweden who have questions concerning the technology and its use; this interest has been very encouraging. In the peer-reviewed conference paper "*Group assessment challenges in project-based learning - Perceptions from students in higher engineering courses*", presented at Utvecklingskonferensen för Sveriges ingenjörsutbildningar 2009, Annika Olsson, Fredrik Nilsson and I identified and elaborated on group assessment challenges for students in project-based learning. The paper highlights a dilemma, i.e. the majority of students want an individual grade/assessment while they prefer learning in groups. This paper was the outcome of the pedagogical course "Examination" where my co-authors and I performed action research on our students, combined with a literature review. We have the plan and ambition to add additional material to the paper for its submission to an international journal. Both the peer-reviewed conference papers in addition to the conference proceedings are also published in the circular "*Lärande i LTH*" in the form of an extended abstract.

5. My learning and teaching journey

Even though I am a teacher, I do not see myself exclusively as a teacher. I consider myself a researcher, co-worker, student, supervisor *and* a teacher. I am where I am today because I have an interest in learning and I have a strong will and the determination to learn things. Based on this I believe, for example, that "anyone can get a PhD – if there is the will and determination to do it." Consequently, in my learning journey I always am on an explorative journey and constantly ask myself what direction I want to go in, i.e. what do I want to learn?

In scientific theory, the development of understanding is illustrated by the hermeneutic spiral (Alvesson and Sköldberg, 1994). Gummesson (2000) uses the hermeneutic spiral (see figure 1) to describe research as a dynamic and iterative process whereby each stage of our learning provides us with knowledge; in other words, we take a different level of preunderstanding to each stage of the research. Looking back at my learning journey, it appears that the hermeneutic spiral aptly describes how I interpret my learning journey. Each activity (teaching or research) conducted contributed to the growth of my preunderstanding, on which the subsequent activity was based. This means that the direction of my learning has been modified as new insights (generating new curiosity and preunderstanding) were gained during the exploration itself.

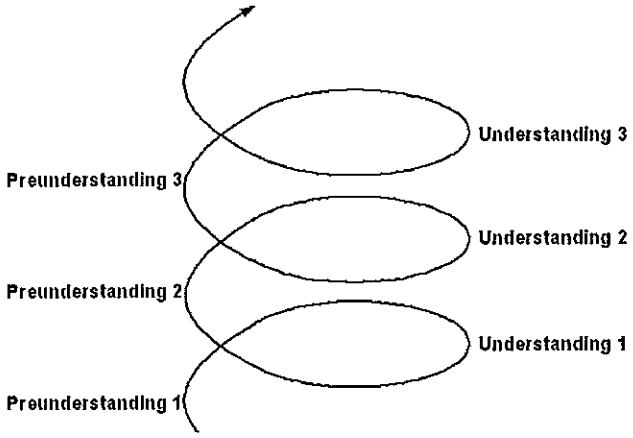

Figure 1: The hermeneutic spiral adapted from Gummesson (2000).

I have never had the goal of becoming a teacher. My interest in teaching bases itself on the fact that I enjoy pursuing tough challenges; for me teaching has become one of the most challenging activities I can think of. Moreover, I enjoy learning, especially subjects related to packaging logistics, and as "You never learn the subject in depth until you teach the subject", teaching was an activity I started to find interesting in my final year as a Master of Science student. Nowadays I still find teaching challenging and I greatly enjoy meeting and getting to know students. Furthermore, I consider students as a source of inspiration for new ideas and perspectives which serve as fuel for my own learning journey.

When reflecting on how I have developed as a teacher I find the model proposed by Kugel (1993) to fit perfectly. When I began teaching in 2001, my focus was primarily on myself; on my role in the classroom. I remember that I spent a lot of time preparing in detail what to say at lectures in order not to forget or so as not to say something stupid or wrong. At this time I considered a good lecturer (such as Hans Rosling) to be equal to a good teacher. After a couple of years, in my second year as a PhD student, my self-centred focus changed. The primary focus became the course itself, i.e. the subject I taught. I suspect that an important factor contributing to this development was that of my research studies within the subject. In my research, which was my main focus as a PhD student, I had a subject focus which was transferred to my teaching activities. In my final year as a PhD student (2006), when it became clear to me that I was going to continue as a researcher and a teacher at the Packaging logistics group at LTH, my focus started to shift from thinking about my courses to thinking about the students. The main reasons for this transition were that I became a father, finished my PhD work, and felt that I had better control of my teaching skills. These reasons enabled me to focus more attention on the purpose of teaching. However, I want to stress that I still have a focus on the subject and myself, but from a student's learning perspective.

During the transition from focusing on myself, to the subject, to the student, I have not only changed how I teach but also what I teach. For example, at the beginning of my teaching career I was given the responsibility of taking over the Simulation of Packaging and Logistics Systems course from another teacher (The Simulation of Packaging and Logistics Systems course was 2001 to 2006 named Modelling of Packaging Systems MTT225). I had taken the course myself when I was a student so I knew a lot of operational things which needed to be improved, and I made these improvements. However, students mainly "learned" what was said at lectures and in exercises. I would strongly argue that the learning outcome (how to develop a simulation model) was virtually useless in real life. Today, students need to use what they have learned (how to carry out a simulation project), whether in solving problems in exercises or during participation in feedback seminars and discussions, in a real-life project situation. This means that students learn

to use what they have learned. Moreover, a focus on student learning has also broadened my view to include the specialisation in the engineering programme. Here lies a challenge in making sure that the students fulfil the learning outcomes of the whole engineering programme.

6. Goals and vision

There is endless learning to do and you cannot do it all. My short-term teaching and learning goals are to strengthen the link between education and research, take pedagogical and leadership courses, and to publish some of my insights. Channelling research into classroom education is fundamental in higher education. In my teaching I use relevant research results, scientific articles, and my students are given insights into the current research front in academia and industry. However, I am aware that there is room for improvement by strengthening the research base in my teaching. Lundmark et al. (2006) suggest 12 criteria which can help teachers to establish a research base in their discipline or programme. One goal of mine is to ensure that the educational courses at the division meet these criteria, and as a first step I plan to develop a policy document outlining the ways we ensure that our courses have an extensive research base.

There are several pedagogical courses at Lund University which I would like to take; Docentkurs, Teaching and Learning Through English, Högskolepedagogisk inspirationskurs etc. I have the goal to take one course every year. To complement my pedagogical skills I also aim to go on some kind of leadership course. However, this is more of a long-term goal. Other goals I have are to supervise more PhD students and improve my supervision skills of PhD students.

I also intend to publish some of my insights. The "Group assessment" paper will probably be further developed and submitted to an international journal. Previously in my portfolio I mentioned that I am in the process of writing a book. This is something I would like to finish, but it is a question of time, money and prioritisation. I also have an idea to develop a case study for teaching purposes based on data I have collected in my research. This case study would fit neatly in the Packaging Logistics course, where students have called for more case studies. Getting the paper published in an international journal, finishing my book and developing the case study are future goals of mine.

My teaching and learning vision for the future is to make the engineering programmes at Lund University top ranked in Europe. To do this, all the students must be recognised by industry as superior. Moreover, all the students must feel strongly that their time at LTH was time well spent, both during and after graduation. How to accomplish this I do not know. But I do know that it cannot be accomplished simply on a course level.

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