

## Leadership instead of grading – the new goals of assessment

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## **1 BACKGROUND**

Traditional aspects associated with current assessment practice are often described with the terms diagnostic, formative and summative assessment. These definitions are based on procedural approach. The diagnostic assessment is normally used at the

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early phases of learning period to identify prior knowledge and skill levels. The formative assessment is used during the learning period to guide and facilitate the learning (assessment for learning). The summative assessment takes place at the end of learning period in order to grade the learners and check the outcome of learning (assessment of learning).

Although this division is known and well established, there exist more sophisticated insights into the role and objectives of assessment in higher education. Several authors have proposed new types of assessment that focus on supporting the learning and would equip students with skills enabling learning throughout their life. These approaches are called integrative assessment and assessment for lifelong learning. [1,2] These are significant proposals, as there is wide mutual understanding within researchers, that the traditional assessment approaches are no longer up to the challenges what the higher education meets today. [3,4]

## 2 THEORETICAL BASE

The Situational leadership theory developed by Hersey and Blanchard [5] is one way to steer the behaviour and relationship between leaders and subordinates. This theory is a leadership model, which is also suitable for higher education. It is based on the idea that the leader (a teacher) changes his/her leadership style according to the development level of the subordinate (in this context a student), regarding to the specific task at hand. The student performance of each task is evaluated against competence level and commitment level. In this approach competence level (x-axis in Figure 1.) consists of task specific skills and transferrable skills. When the subordinate demonstrates high competence level less directive behaviour is needed from the leader. The commitment level (y-axis in Figure 1.) consists of motivation level and level of self-confidence. The more subordinate demonstrates commitment to the task the less supportive behaviour is needed from the leader.

Question for teachers: what if we abandon idea of grading the learning results and begin to use the assessment as tool for situational leadership? This would enable us to study how aligned our assessment methods are comparing to the appropriate leadership style in each course.

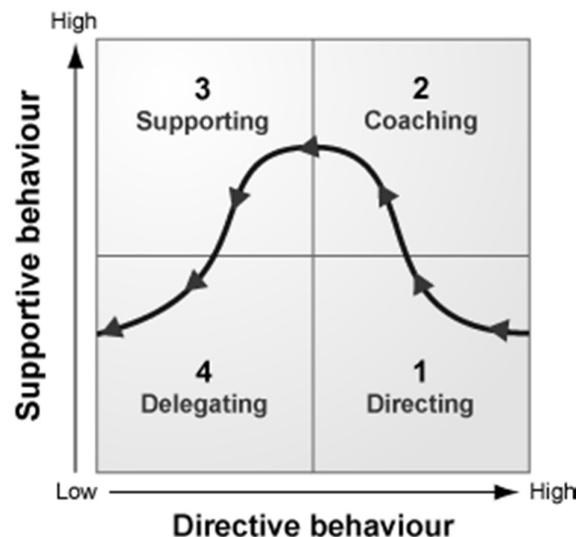


Figure 1. Four leadership behaviour styles to meet each subordinates' development level according to the Situational leadership theory [5]

The model of the development levels has four leadership styles as represented in Figure 1. In the first style – Directing (Telling in teaching) – the directing behaviour is strong and the supportive behaviour is in minor role. When the student's development level reaches the second style - Coaching (Selling), the students' interest in to the matter has been induced and the teachers' supportive behaviour increases. The third leadership style is Supporting (Participating) in which the teachers' role changes to facilitator, meaning that the directive behaviour diminishes, but the supportive behaviour stays high. The development level of the students is high enough for learning events, for example seminars, where the teacher is an equal participant in the discussion. At the fourth level students are self-directed and the teacher becomes a sponsor enabling further growth. Then both, the directive and the supportive behaviour are low, and students' tasks are for example thesis or other individual or self-directed study-group works, where their own role in the evaluation is high. The assessment is in crucial role to know, whether each development level in learning takes place.

At the beginning of the university studies most of the students are in the same learning mode as in elementary or secondary school. They are more or less dependent on the teachers as guides of their studies and they believe that everything said to them by the teachers is the ultimate truth. The transformation to experts demands also maturation to a self-steering person who is able to solve complex multidisciplinary problems and know from where and how to get the information. Hence the assessment has to evolve to direction where given problems or assignments are similar to real industrial cases or actual cases from the industry, and the grading is strongly related to the capabilities of student's autonomous working. Applying situational leadership theory into teaching leads us to define different roles for the teachers and the students at the different development level. A well balanced proposal, what these roles could be, can be found in reference [6] and the summary is represented in Figure 2.

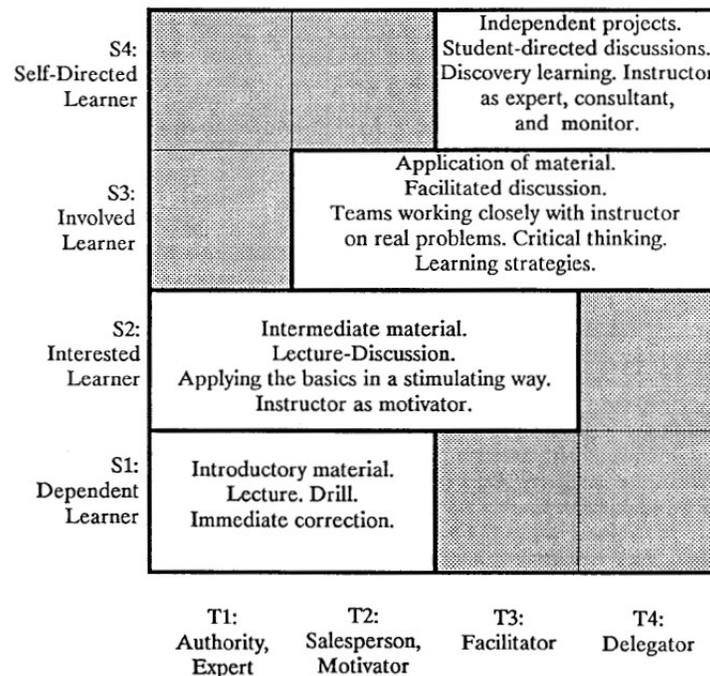


Figure 2. Change of roles of the teacher and the student and its effect on activities [6]

Teachers' role and the assessment method used evolve based on which the students' development level is. At the lowest development level the assessment measures purely the learning of basic theories of the topic. On the highest level the assessment should value the true understanding of the matter and the knowledge the student has gained. In addition to understanding, the students should have characteristics and skills (e.g. being independently initiative, capable to search solutions and information, and being able to see the validation of the references).

As the students' development level increases, their own ambitions evolve at the same time. In the first level the students work just enough to get an average grade and practically just to get that grade. At the other end the students are not interested so much on the grading, but what they learn. These levels have similar characteristics, but are not exactly the same as in the Situational leadership theory. The "unmotivated beginner" –level is not considered in this one.

### **3 RESEARCH METHOD**

We approach the assessment issues by defining the relations between the goals of assessment and the assessment methods. We define the goals (reasons) of assessment as follows: rewarding, motivating, guidance of the students, supporting of the maturation, and quality control. [7] The emphasis of these goals varies depending in which level (of the Situational leadership) the students are. We discuss what the emphasis might be in our teaching topic: product design and mechanical engineering. The main contribution is the evaluation of how the practical assessment methods relates to the presented goals of the leaderships. The assessment methods include different types of exams (from traditional essay exam to verbal exam and peer assessment), assignments (from personal smaller tasks to multidisciplinary large scale group-works) and seminars. We analyse suitability of the assessments methods to the goals of leadership at two different courses in our curriculum. Based on this approach we discuss how aligned our assessment methods are comparing to the appropriate leadership style.

### **4 CONNECTING THE GOALS TO THE DEVELOPMENT LEVELS**

To be able to connect the goals to the maturation levels, the definitions of goals need some refining. This is done below. We also make proposal, what is the most relevant development level for each goal. These proposals are valid within product design and mechanical engineering education area. The subject differences have effects on these. [3] We also give brief notations for the motivation for later reference. The development level numbers (L1, L2, L3 and L4) below refer to figure 1.

The levels of rewarding are presented first, and there are five levels:

R1 – Rewarding hard work the students have done. Most relevant at L1.

R2 – Rewarding the accuracy in keeping time schedules. Most relevant at L1.

R3 – Rewarding the correct form of the student work. Most relevant at L2.

R4 – Rewarding the quality of the content of the student assignment work. Most relevant at L3.

R5 – Rewarding unique thinking and questioning the given information. Most relevant at L4.

The motivating has three refined goals:

M1 – Motivating students to make at least minimum effort to pass – L1, sometimes L2

M2 – Motivating students to try their best – L2 and L3

M3 – Motivating the students to find their own motivation – L3

None of the motivation goals is relevant at level 4 because, according the situational leadership theory, there is no need for external motivation.

With guidance we mean the improving of the students' consciousness about the studies and the career possibilities. This has four refined goals:

G1 – Selling the subject to the students – L1

G2 – Guiding to students to find and select their preferred professional identity – L2

G3 – Guiding the students to develop their own professional identity – L3

G4 – Guiding the students to think what they want to achieve in their professional careers – L4

Promoting of the maturation has three refined goals:

P1 – Giving the responsibility of the learning to students – Relevant at all levels.

P2 – Hand over the expert role to the students – L3

P2 – Giving the responsibility of target setting to the students – L4

Quality control has three goals:

Q1 – Dividing the output in grades – none of the levels.

Q2 – Preventing the passing of “faulty” ones – none of the levels.

Q3 – Selecting the future researchers – maybe level 4?

The quality control is a difficult goal, when applying the situational leadership theory. Quality control is often summative and thus it is not intended to facilitate learning. We have to admit that, if quality control is assessment priority number one, there is little added value to be found in situational leadership.

## **5 THE CASE COURSES PRESENTED BY TERMS OF THE SITUATIONAL LEADERSHIP THEORY**

### **5.1 BEGINNER COURSE ON MECHANICAL ENGINEERING**

The first case course is a bachelor level course, where specific thinking patterns of a mechanical engineer are introduced to the students. The theoretical content of our course is similar to many other courses in the universities in USA. The thinking pattern of mechanical engineer is presented to students as a collection of rules and advises. As our fellow universities, also we call them “Fundamental Principles of Mechanical Engineering”. It is somewhat open question which of the rules can be called justified principles and which ones of them are really fundamental. Although this is a bachelor course, we encourage the student to evaluate the principles and form an opinion of their importance. The lectures of Alexander H. Slocum at Massachusetts Institute of Technology are a good example of this kind of approach [8]. The course in question would mainly be at maturation levels 1 and 2 (presented in the figure 1). If we look again the figure 2, we can see that the low level of maturation proposes teachers' roles T1 and T2, which are authority and motivator. This is a course where traditional summative examination would be natural choice for assessment. This would support quality control goals 1 and 2, dividing the output in grades and preventing the passing of “faulty” ones. However, in our university the grades of this course has minor

influence on students' choices in further studies and very few students will graduate without deepening their knowledge on this subject. So having a traditional exam, would mean to have wrong tools for our purposes.

If we look goals for levels 1 and 2 and pick to which are important in this subjects, we'll get:

R1 – Rewarding hard work the students have done

M1 – Motivating students to make at least minimum effort to pass

M2 – Motivating students to try their best

G1 – Selling the subject to the students

G2 – Guiding to students to find and select their preferred professional identity

P1 – Giving the responsibility of the learning to students

The students at this course are not a homogenous group. There are people, who have had engineering as their hobby and are already at level 3. There are also people who are total beginners or almost ignorant in this subject. This has led to conclusion, that it is not the best alternative to force all students to learn in the same way. There are different options how the assessment is performed. The students are free to choose the alternative which is the closest to their preference and motivation.

The choice for students is between exam or assignment. If they choose the assignment, they have to decide the grade in which they aim. After making the assignment, they evaluate by themselves whether the chosen grade is attained. The grading is simple. The more principles taught at the course they use in the assignment, the higher the grade is. This supports very well the rewarding of hard work (R1). The students can pass the course with minimum effort by deciding to have poor grade. Then he/she only have to work out couple of the principles. This fulfils the goal M1. On the other hand, the extra effort will likely raise the grade. This motivates students to try theirs best (M2). In any case the students are asked to take responsibility of their own learning (P1).

The students have wide freedom to select the application which they focus on their assignments. Only on the highest grade, taking account majority of the principles is required. Most students can focus on those principles they find interesting or familiar. This facilitates their attitude towards the subject and thus supports goal G1. Those students, who are mature enough to think about their possible professional identity, will get an idea of what it takes to become professional in this subject (G2). They can try their wings by selecting the highest grade as the target.

In the exam, the students are asked to explain five randomly chosen principles. So to get a decent grade or even to pass, the students who have chosen this, must know all the principles. The exam is actually a poor optimization in terms of workload and grade, but every year many students choose it. It is however important from leadership point of view to have exam as an alternative. Every student who is making assignment has chosen that by him-/herself. Nobody needs to do it against his/hers will. This has a big effect on motivation.

## **5.2 ADVANCED COURSE ON PROJECT DEVELOPMENT MANAGEMENT**

The second case course is a master level course, where the students are trained to use tools and methodologies of advanced project development project management. The course resembles real project development project in industry. The "school-likeness" is minimized. The students are working in projects teams and first they form their team organisation and decide how management of the team work is done.

Teachers take role of customers, who had made the invoice for the project. At the end of the course, professionals from industry are invited to evaluate the work of the teams and to choose the ones they would buy.

This is one of the last courses before graduation. The goal is to provide students state-of-art skills and a professional attitude to manage development projects in industry. So the goal is that students will enter development level 4 (in figure 1.) when passing this course. We call the structure of the course "mountain climbing". There are many checkpoints, which the teams must reach in time. For every checkpoint, the team prepares their proposal for solutions. They could get maximum five points per checkpoint. As climbing the mountain, a lot of work is needed and there are obstacles, but every climber has the strong will to reach the peak.

The team will get the first point at the checkpoint if they are in time. This corresponds to goal R2: rewarding the accuracy in keeping time schedules. The team gets the second points if their proposal is acceptable. This probably motivates students to make at least minimum effort (M1). The team get the third point if they have successfully applied the given tools. This corresponds mostly to goal R3: rewarding the correct form of the student work. The fourth point is given, if the proposal is high quality. The goal for assessment here is rewarding the hard work which the students have done (R1). If the proposal reaches the level of the best proposal (between other team) at the checkpoint, the team get the fifth point. This motivates students to try their best (M2).

Now there seems to be contradiction, because this course should facilitate student transformation from development level 3 to 4. The goals R2, M1, R3 and R1 are almost irrelevant at levels 1 and 2. Only M2 is relevant also at level 3. But the case is not so straightforward – there is another level of the assessment and the goals. The students are working in independent teams. They have to choose how good they want to be. Inside the teams, individual students must choose what tasks and roles they want to take. This creates new kind of motivations. The students have to think about their professional identity and probably for the first time in our university they have to think what they want to achieve in their professional careers. The responsibility of target setting is totally students' own responsibility. These are motivations G3, G4 and P2. G3 is most relevant at level 3. G4 and P2 are most relevant at level 4.

This is a good example, how the assessment is no longer on the focus, but it is used as a tool in leadership of the student groups. How many points a team gets, is after all not important at all (although the grades are given according this). Important is, did the students feel that they found their professional identity and did they understand that they have to take responsibility for goal setting - not in near future but now. At the beginning of the course, we warn the students that they could get a poor grade from this course even if they learn very much during it. Then we ask how many of the students would prefer good grades instead of good professional skills. As students are very near to entering the working life, they will accept that skills are more valuable than grades. And after all, very few students get a poor grade from this course. Often teams rework their proposals completely and use enormous amount of work to bring it up to the level of the best – no matter how much time it takes! In these cases, there is no question if the students have reach the level four!

## **6 CONCLUSIONS**

The teachers lead the learning, whether they are aware that or not. Leading people includes inevitable rewarding and punishing. In schools and university environments the natural place for these is the assessment. So leadership cannot properly be discussed without taking account the assessment methods and practices. The

situational leadership gives theoretical framework for turning the assignment and its assessment from quality control to leadership tool. The examples in this article shows that the new practices of assignment differ considerably from traditional approaches on all levels from beginner to advanced level. The analysis of the goals and means shows theoretically, that proposed solutions are able to support the selected goals.

The student's and the teacher's opinion towards these approaches have been very positive. There are no quantitative data available to show that learning had improved. However, there is strong evidence that learning has not been deteriorated due abandoning quality control points. Qualitative material collected by interviews, shows that students opinion of their abilities in subject areas has improved. For example, the students of the project management course have sent us messages after been some time in industry and praised the skills they have learned at the course. According this we feel confident to recommend leadership approach at university level of teaching.

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