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# **PROGRAM LEADERSHIP FROM A NORDIC PERSPECTIVE – PROGRAM LEADERS’ POWER TO INFLUENCE THEIR PROGRAM**

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## **ABSTRACT**

In this paper a continuation research at five technical universities in Nordic countries (N5T network) in 2012 is presented, where the aim was to find out how the program leaders conceived their function, role and mandate, and the work situations between the universities were compared. The previous research demonstrated that program leaders have quite different positions, strategies and methods when it comes to monitoring and developing their programs. In this paper, a deeper investigation is carried out of the (im-) possibilities to make real influence on the study courses that constitutes the respective Engineering study programs. Eight program leaders from the five N5T universities have been interviewed, and the analysis of these studies, has culminated in a model for the analysis of program leadership for Engineering education development.

## **KEYWORDS**

Program leader, program director, education development, integration, leadership, power.

## **INTRODUCTION**

In Spring 2012 a questionnaire study was carried out among educational leaders/program directors within the Nordic Five Tech (N5T) universities. The aim was to find out how the Program Leaders (PL for short) conceived their function, role and mandate, and compare the work situations between the universities [1]. In the questionnaire, there was one open question, while the other questions were quantitative rating questions. The open question was asking the program leaders to show which steps they would take if they were to improve the integration of, for instance, sustainable development (knowledge, competence and judgment skills) asked for by future employers, but not belonging to the main field of study in the program. This case was included in the questionnaire due to its strong relation to the main challenges for educational development, especially in a CDIO context.

The answers given to the case in the 2012 study [1] showed interesting qualitative aspects that helped us understand that there are difficulties and challenges for the integration of engineering competencies, knowledge and skills, in a study program, that should be further explored. Quite a few program leaders gave us hands-off statements, like: “(...) *But I am not in a position to "tell" other professors to change their courses.*”, and: “*On the MSc level, I would talk with the professors responsible for different major subjects. It is up to them to decide whether to adopt such proposals*”. Others, instead, had a clearer path to show in the answer to the question of their strategies to integrate engineering skills and competencies and new knowledge in their study program.

In this paper, we investigate deeper the revealed differences in the relation between the program leaders and the execution of their study programs, by analyzing the interviews with program leaders at each of our universities. The aim of the paper is to explore the nature of power among program leaders, as well as the relations between program leaders and teachers within the program, in order to improve the possibilities for engineering education development. The research questions for the study are: 1) *What is the nature of the power that the program leaders have?* 2) *How is the collaboration and communication between program leaders and course responsible teachers working, in relation to the program leaders’ power?*

The findings from the interviews are, that there seems to be two important dimensions influencing the PLs possibilities to influence his/her study program, namely the *Formal power*, and the *Informal Power*. In the analysis, we present the position of the interviewed PLs graphically, related to their levels of both dimensions. Together with this, examples and quotes are given as arguments for the analysis. Follow-up interviews might change the positions, but there is still reason to argue that the model in itself and the insights from the study can play an important role when supporting program leaders, in order to make change and education development possible.

## RELATED WORK

Many argue about the increased importance of leadership in HE due to the changing society, and a changing situation of the university. Lindström [2] argues: “Without clear and visible leadership indicating the importance of the total view of the work on development, success will be hard to achieve”. Still, Lindström is not mentioning the PL role in this, while instead pointing at rectors and deans. Walkington [3], on the other hand, argues: “Curriculum is no longer the sole of responsibility of the singular academic in a university. Its development requires a broader holistic view that considers the needs and the impacts of students, teachers, institutions, employers and governments—enhanced through being informed sufficiently to make decisions”. Through her research investigation she pins out several principles for curriculum change, where one of them is that you will need both bottom-up and top-down strategies. The bottom-up approach deals with discussing and creating a common vision, finding a core group of “motivated staff”, and she delivers many ideas on how to work with development, step by step. Both of the above demonstrate the complexity of academic leadership.

Ramsden [4] crystallizes this challenge: “Like good teaching academic leadership is not telling or transmitting information and ideas; it is a sort of conversation aimed at helping people to change and develop.” Three main challenges for academic leaders are identified: a) doing more with less resources, b) leading academic staff in a time of fast change, and c) turbulence from re-organization of higher education.

Academic practice often complicates the challenges even more. Looking at Education Directors at Uppsala University in Sweden, Elmgren et al. [5] found that work tasks and rights were unclear. They found many expectations, from the president, the faculty, and the students, which the Education Director had difficulties fulfilling. The authors have divided between two quite different forms of acting in this role: *Leadership* (inspire, motivate, mobilize, make possible, create vision) and *Management* (plan, organize, control, solve). The authors state that when the introduction to a position as an Education Director is deficient, when your mandate is unclear, when you have lack of time for your mission and few concrete tools, you normally only end up with working with the management part. The work with important long-term projects is normally set aside.

Henriksson et al [6] analyze the consequences of these pressures in their work about the role of, whom they call Pedagogical Leaders, an overarching term for academic staff leading education development, for instance, Education Directors and Program Directors. They conclude that Pedagogical leaders often feel insecure in their role, since it's rather unclear what their mission and mandates are. Henriksson et al conclude that since the pedagogical leaders are the ones who should support teachers in forming and developing fruitful courses and learning environments, they need to develop their self-awareness and leadership skills. Furthermore, they must have insights into the academic activities they are leading, together with the local academic culture. Finally the pedagogic leaders will need to be aware of teachers' competencies, and need for competence development. The authors suggest more networking between pedagogical leaders, and more leadership training and support.

To summarize, most authors talk about problematic situations and suggest strengthening the position of the program leader by providing tools and/or mandate. Ramsden and Walkington most clearly point out that academia is different from other leadership/management positions, and that conversation and collaboration should play a bigger role.

## METHOD

There are considerable differences in practices, environments and cultures where the PLs work in the N5T universities, as we have understood from the survey in 2012. To understand these differences more deeply, we decided to interview 1-2 program leaders from each site using a semi-structured interview, where the script was based on observations from the previous study. One or two authors from each university carried out the interviews

locally in the native language of the interviewees. The interviews lasted from about 1 hour to almost two hours, which allowed discussing the themes in quite depth. The interviews were recorded and notes were taken during the sessions. For the analysis work, summaries of the notes were translated to English, and parts of the interviews were transcribed and translated into English text.

## ANALYSIS AND SUMMARIES OF THE INTERVIEWS AT THE N5T UNIVERSITIES

In this section we summarize a number of central aspects of the interviews. Table 1 shows a brief summary of PL's responsibilities and facilities and demonstrates the big differences between the institutes. This is reflected in the interview summaries, where different things are highlighted.

We have characterized these differences graphically in Figure 1. The y-axis presents the level of *formal power* the program leader has in his/her mission, in order to influence courses and teachers for education development. High formal power means having a mandate to decide upon the course design of the study program courses (ILOs, activities and assessment tasks). For the interviewed PLs in this study who show high formal power, it also included "ownership" of all courses, by controlling the funding. With high formal power, there is also an official system for notifying the Program Leaders about changes within courses. The x-axis corresponds to having *informal power* to build commitment among teachers, and being able as a Program Leader to influence courses and teachers by communication and collaboration. It also includes being notified about changes made within different courses in an unofficial manner, through different communication channels, mostly talking.

**Table 1. Summary of information on the Program Leaders who were interviewed.**

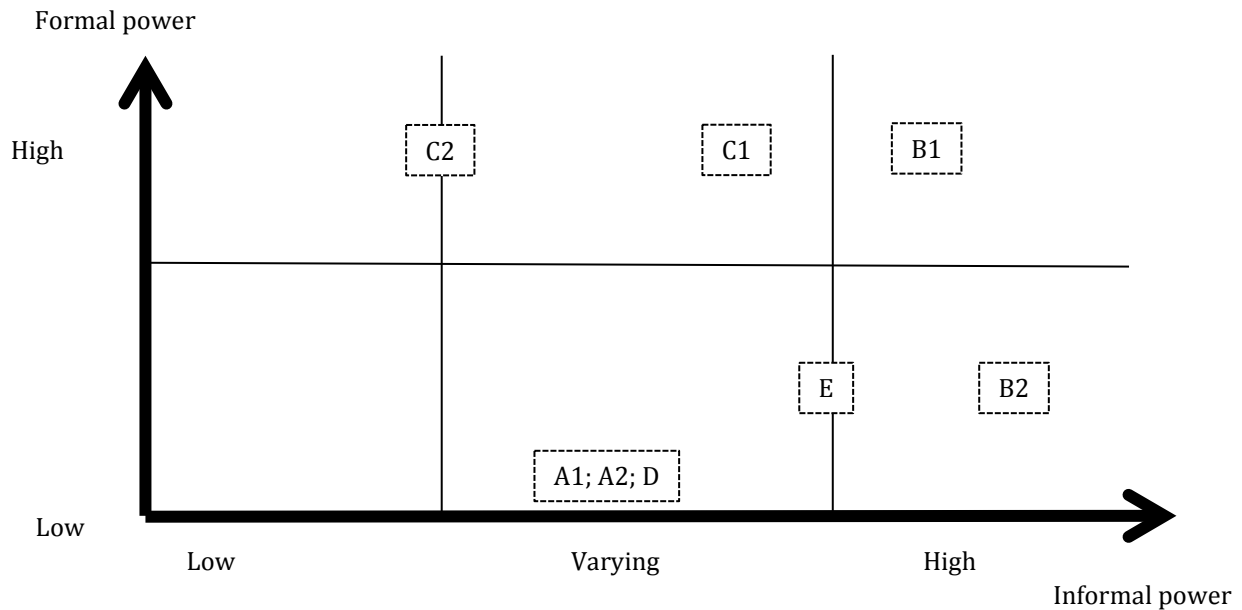
	A1	A2	B1	B2	C1	C2	D	E
Years as PL	5	8	18	11	5	5	4	2
Program type	MSc	BSc	BSc	MSc	MSc	MSc	MSc	MSc
Duration	2 years	3 years	3 years	5 years	5 years	5 years	5 years	5 years
Subject area	Computer Science & Eng.	Software Tech.	Chem. Eng.	Eng. and Education	Industrial Eng & Management	Electric al Eng.	Industrial Design	Comp Science and Eng.
Courses owned by	Head of resp dept./ managed by the study board <sup>1</sup>	As wjth A1	Head of resp dep and controlled by the PL	Head of resp departments	PL regulates the course syllabus/ specification for all courses in the program	As with C1	Head of each dep respectively	As with D
students/yr.	~90	~60	~20-50	~50	~90	~65	~30	~100
Financial resources / year	For student meetings and other arrangements	As wjth A1	All running costs for the program, including courses and teachers	Money for course development, extra time as a PL and logistical problems	Program development budget, based on nr of students. 2.5 MSEK this year; AND course budget. Approx. 45 MSEK.	As with C1	15000 euro for student arrangements PLs' travel + represent. costs	5000 euro for coffe and events
Official workload	20%	20%	20% (+20%) <sup>2</sup>	30% (+10%) <sup>3</sup>	30%	30%	Not defined	Not def
Formal work descr.	YES	YES	NO	NO	YES	YES	YES	NO

<sup>1</sup> PL is not a member of the study board

<sup>2</sup> Student consultant

<sup>3</sup> Extra PL time for larger development projects

**Figure 1. Positions of our interviewed Program Leaders. Power to influence courses and teachers.**



**A1 and A2: Very low formal power and Varying informal power**

Very low formal power: According to the work description A1 and A2 should, among other more administrative things “lead the development and evaluation of the program, including the establishment of an advisory group”. Still, this mandate does not include any tools for actual formal power. The courses are “owned” by the sections set up by the Head of Department and “managed” by the study board. Due to the size of the department the PLs at University A are normally not members of the study board. A1 and A2 have no financial resources except for a budget for student meetings and other arrangements. Both PLs have no personal resources, but the central study administration can sometimes assist. The main tasks that A1 and A2 finds they are carrying out, are the yearly update of the study handbook, course evaluation follow-up in cooperation with the study board, and the accreditations and internal evaluations. The above named Advisory groups that the PLs at University A should establish are “rather informal at the moment”, but are moving towards becoming more formal according to A1. Both A1 and A2 would want more mandate to influence courses, and having more time to allocate on development projects.

Varying informal power: Overall, according to A1 and A2, the teachers in their respective programs have a common vision about the educations, but they find it difficult to “maintain the understanding”. Both A1 and A2 complained that PLs are not always informed about changes that are made on single courses in the program. In general, they argue, larger structural changes to the programs are difficult, but smaller adjustments are quite manageable. The reactions to changes from section leaders and individual teachers are dependent on the situation and both good and more problematic cases exist. One particular case that A2 encountered in a course in his program was solved after a dialogue with the study board and the responsible teacher, involving special exercises and extra teaching assistants. Another case with a cancelled course is still not resolved, and A2 finds no resources to move forward in order to

solve the situation. Both of them would like to develop better trouble-shooting methods in their education development work.

**B1: Very high formal power and Very high informal power**

Very high formal power: B1 chooses teachers for the program, owns the courses in the program in the sense that she approves all course syllabuses (new and changes made). She also holds the whole program budget. The difference from many other programs at this university is that in this specific program B1 has had the academic responsibility as well as being both client and the producer. She is the head of the division that provides the courses and has the opportunity to buy courses from other schools. The courses are owned by this program even though they have been able to bring in teachers from different departments. The biggest advantage has been that B1 has been able to choose teachers. “We have been able to engage teachers who were interested in education; we have been able to ‘pick the raisins out of a cake’.” The program receives the money that it generates and therefore is self-financed. However, it would not be possible to run the program like this, she argues, without the infrastructure that is offered by the school.

Very high informal power: The division team, of which the PL is head of, has approximately 50% of the education within the program. All of the teachers are focused on teaching; none of them are involved in research. The rest of the courses and/or teachers for specific courses are bought from the school of Chemical Science and Engineering or other schools even outside University B. The collaboration with teachers has always been good, according to B1. They all see the program as “their program”, always in a positive spirit. “The teachers in the program have a common goal: to give the students the best education for life”. It is important for all that the students can have the career choices when they have fulfilled the degree. “I feel that all the teachers want to do their best, I feel that all of them are engaged in the students and their own courses. We have great teachers. There is no difference on where the teachers come from. I find the best teachers”. B1 has continuous contact with all the teaching staff to progress the program. Most contacts are one on one, to discuss various issues of their courses. Once a year they all come together for a “kick off” and discuss the education and issues within the program. Regarding CDIO implementation, many of the ideas were already applied in the program when CDIO was introduced at University B, according to B1.

**B2: Quite low formal power and Very high informal power**

Quite low formal power: B2 does not have any official mandate to make decisions over courses in his program. This is something he finds natural, and states that he wouldn’t want it any other way: “I don’t think it should be up to me to decide how a course should be designed. (...) I can only say what I want, would like.” But, at the same time he points at occasions when the struggle with some courses has been frustrating, and he has sometimes considered giving up his PL mission, especially early in his career. Now, looking back, he prefers the team that he has built over the years, instead of having a more firm mandate. Still, he has a smaller budget for program development, which he can use for new courses, for teachers’ costs when developing courses, and for his own extra time working with development projects.

Very high informal power: B2 works with a core team of teachers from all courses that are mandatory for all students. These courses (100 ECTS credit points) are spread out over all five study years, and are given by several departments, schools as well as at another university. In this set of common core courses, B2 states that he can work successfully with program development. The main topic on their agenda at the moment is the integration of skills, and syncing them between courses. “I find that the environment now among the teachers makes it easy for me to talk about integration of disciplinary knowledge and engineering and teaching skills<sup>4</sup>.” When asked why, he points at earlier success among other study programs, and more awareness among the teachers and the Program Directors of Study. “The CDIO methodology, that existed before CDIO, but now has a language, is a big help for me as a program leader.” B2 says that within the core troop of teachers all are committed to design the best courses for their students. The fact that the neighbor university now is delivering custom-made courses to his students, is something he finds to be a proof of good collaboration and communication. This was not the case when he started running the program, over ten years ago. “Talking, talking and talking” has been his way to create a common vision.

Courses outside the common core are not as easy to influence, since his students normally are only a minority studying together with engineering students in different fields. His strategy for this has been to have Program Directors of Study within his program, for each track the students can choose. These teachers are spokesmen for his

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<sup>4</sup> Students become both teachers and engineers within this degree

students out in the specializations, at study meetings and planning, and can report and inform on different education issues. At the same time, these Program Directors of Study have the functions as subject field experts, supporting B2 in the program development.

**C1: Very high formal power, varying/medium informal power**

Very high formal power: PL allocates funding to courses in the program. Every year he goes through and approves the regulating syllabus documents, including learning outcomes, contents, examiner etc. By this, he is notified of changes made, and can send them back for revisions if he isn't satisfied with the course design or students' course evaluations. C1 states though, that his formal tools for program leadership are "a bit toothless, theoretical constructions".

Varying informal power: C1 finds it easy to talk to course responsible teachers, if they work at his own department. If they work at other departments, he normally talks to the vice deans, but sometimes also directly to the teachers. C1 must regularly inform the program teachers about changes in the program and take their view on the same. However, C1 has in total 126 courses in his study program, and he finds it difficult to summon all teachers at the same time. Moreover, according to his work description, C1 should also collaborate over the department boarders. Still, he uses his development budget for "regular" issues, such as new courses, inspiring lectures and extra evaluations, instead of cross-department activities. At the same time, C1 values communication with teachers: "informal diplomatic tools directly with the teachers/examiners face to face are more useful".

**C2: Low/varying informal power, very high formal power**

Very high formal power: C2 has the mandate and the money to decide over all courses that the study program owns. For courses shared between several programs, one program formally owns the course, and changes need to be approved by the other PLs. There is a detailed work description for C2. "I have a clear view of my assignment. [My university] has a rather extensive and detailed work description for program directors. The challenge is that it is so extensive that you need to prioritize. The question is whether you are prioritizing the right things at the right time."

Low/Varying informal power: "We have worked with improving the students' motivation, but we also need to work with our teachers. A particular challenge (...) is also that Electrical Engineering is spread over six different departments. It makes it difficult for all to feel responsible for the program's entirety and also leads to conflicts over space in the curriculum. What department should deliver a particular course, and how many credits should it give?"

He also says that: "we should have had more CDIO-inspired elements [in our main development project], but were not able to carry it through." (...) "I do try to inform teachers of the outside requirements on our education, for example that students should be trained in ethical issues in engineering." However it can be tough to convince the teachers that this is their responsibility too, he argues. He thinks that the teachers have not been aware of all national degree requirements, specifically those that concern generic skills. When asked, how he thinks teachers in the program are looking at him as a PL, he says: "I think that many teachers view me as a figure, who is pretty far from the program. There are more than 200 teachers in the program. They may come in contact with me mainly as an administrator who poses requirements on how course plans and learning outcomes are written. I want to strengthen my contacts with the teachers by creating a teacher team, at least for the bachelor level courses."

They have an annual process for generating and prioritizing ideas, and try to involve not only programs but also the departments more in idea generation through a series of workshops. However, "the hard thing is not to come up with ideas but to bring them to completion. We work with too many ideas at one time." For the next year, the aim is to make all teachers aware of the program's goals and of what others are doing in the program, to discuss learning sequences and to chart out the pre-knowledge for different courses. "This should improve the collaboration in the programme", C2 says.

C2 reports of a similar problem as C1: "I have a weak connection to the teachers. I go to some course evaluation meetings, if there is a problem in a course, or if there is a new teacher. But there are many, more than 200 teachers in the program, and they work for six different departments."

### **D: Varying informal power, and Low formal power**

Low formal power: D does not show any formal tools that he can use to influence courses that students within his study program are taking. D raises the point that he feels an obligation towards the students: “The PL is the link between the student and the academic staff, and shall ensure that the promised education is given in a proper way.” He says that “To reach the program’s goals, the PL has to coordinate between the courses, look at the total use of methodology and training of skills. We are educating students that shall fit in the role of both a designer and an engineer and this means a lot of efforts on program level. The PL can influence the internal courses, but when it comes to the external courses, the PL can only control the quality.” (...) “This is a general opinion, everyone agrees but no one is doing anything to make it better.”

Varying informal power: *internal* versus *external* courses plays a big part in how much the program leader has to say about the courses given in the study program. With internal courses, D means courses given by his own department. “(...) there is a high motivation in the staff for developing the internal courses according to the goals of the program”. D states he can “influence” courses that are given by his own department, while only “controlling the quality” of courses outside his department.

### **E: Quite high informal power, Low/Medium formal power**

Low/Medium formal power: E formally accepts the Master's thesis project topics and their grades as the chair of the program committee. Even though he does not have special mandates as a program leader to actually influence courses in the study program, through this committee he can, however, also formally influence program development. He comments, though, “I think teachers expect me to, not make the final decision, but reach the consensus between different viewpoints. Some people might see me also as a person who is somehow related to whether individual teachers have a job next year. But I don’t have the money to decide that kind of things. I can discuss about the content and not to think whether we currently have the right person to give that course.”

Quite high informal power: E seems to have worked his way to make an impact on informal basis, even though the Academic Affairs Committee of the School of Science is making many important decisions above him. Still, it doesn’t seem like he is actually influencing that much on the contents of the courses. He shows high trust in his teachers to work independently with this: “Our teachers are very capable of working independently. Mostly we discuss together with the teachers. (...) We see that teaching methods vary from course to course.” He adds that influencing courses outside his own department is more difficult.

## **Discussion – formal versus informal power and the way to go**

The presented and analyzed program leader interviews reveal much of the big variation in the field. We cannot claim that they represent the common conventions in each of the universities, but rather, we conclude that they inform us well about the challenges in program leadership.

From our interviews and analyses, we have seen variations of the formal power a PL has, as well as variations of the informal power. As can be seen from our analysis, neither of the two implies the other one. As a program leader, you might lack the formal tools to influence the courses in your study program, but at the same time you might have such a good collaboration with your teachers, that you are able to carry out education development projects, by influencing courses, easily. As has also been shown, being a program leader with high formal power, you still might have difficulties reaching to a real curriculum development among teachers.

Therefore, we have designed a graph where the formal and the informal power respectively, have been given separate axes. In this graph, we have tried to place our interviewed PLs, depending on our view on their level of each of the two sides of the power. This, in order to make a visualization of different positions and situations a PL might end up/be in. The target for us has not been to make exact positions, since firstly, deeper interviews with specific questions we know in after-hand would be good to ask in order to have a more clear picture, have not been carried out, and secondly since we see that the positions change with time, and with the tasks and achievements a PL might have.

The formal power is an aspect decided from someone above the PL, and has more of an on/off-button property or better stated; involves a firmer situation from day to day. The informal power on the other hand, relies on the PL



herself/himself. How the PL communicates, collaborates with teachers, and how the PL is able to involve the teachers in a common work towards the program's goals, are influencing factors within the informal power. It is obvious to us after this study, that even though you have high formal power, you might be struggling with actually making real change and development. C2 raises the issue that you will need your teachers on board. C1 states that formal mandates can be quite toothless, compared to informal and diplomatic work. Both of them have high formal power according to our analysis. We discovered that high formal power is not the single important aspect for enabling changes, and influence course development. Instead, some had proven to work their way around the system such as especially B2 and E, with low formal power. B1, on the other hand, is given high rates on both informal and formal power. A follow up interview to realize which power leads to what, would be interesting to carry out.

According to Elmgren et al [5], as a pedagogical leader you normally end up with 'management' issues, instead of leadership tasks, when having too little mandate. This is not completely shown in our study, where there are two PLs (B2 and E), who despite of their lack of formal power drive their program towards the program goals. And at the same time, we see two programs (C1 and C2) with high formal power (translated to mandate), that still are not able to work with leadership issues as well as they would want to. Still, we especially see two PLs (A1 and A2) who have low formal mandate, and put their emphasis in their daily work on administrative routines.

From what we can see, it seems like a high informal power is a good thing to have for a PL, no matter how high the formal power is. With this informal power, you are able to work out your program ideas with your teacher team. A risk for program leaders with too low formal power is that they have to rely on their personal leadership and communication skills. "Talking, talking and talking" have been B2's strategy for many years, in order to reach his high informal power of his study program's content and learning activities. For some people such an achievement may not be possible due to personality reasons. Moreover, in the academic environment, where research competences are highly rated, this may sometimes imply that only distinguished researchers are taken seriously and can execute an informal power.

What kind of person can cope with leading education development in academia successfully? Maybe it is a must to have as low formal power as possible, and as high support as possible for creating an environment of collaboration and good communication? But then one could be almost toothless against truly difficult cases, where there is no collaboration with some teacher and changes must be carried out. Would increasing the level of formal power for A1, A2 and D (figure 1) be the best way to go?

## **CONCLUSION**

The aim of this paper was to explore the nature of the power that the program leaders have, together with relating this aspect to the communication and collaboration between teachers and program leaders. It seems like a not insignificant part of successful leadership involves a high amount of collaboration and negotiation, in order for the program leaders to see real change and development in courses and thereby in the curriculum of their program. Therefore, aiming for a more firm mandate for our program leaders might not be the solution, or not the whole solution. The program will always need independent experts running courses with high quality, and the program leader herself/himself will not be able to make all decisions involved for this. Instead, supporting program leaders AND teachers to create functioning environments for collaborative work with program development, by sharing ideas and experiences from program leaders who have "succeeded" may be the right way to move forward.

## REFERENCES

- [1] Högfeldt et.al (2012): *Program Leadership from a Nordic Perspective – Managing Education Development*, CDIO Proceedings 2012.
- [2] Johnny Lindström (1994): *A System for Quality Improvement in Higher Education*, European Journal of Engineering Education, **19**:3, 255-261
- [3] Jackie Walkington (2002): *A process for curriculum change in engineering education*, European Journal of Engineering Education, **27**:2, 133-148
- [4] P. Ramsden (1998): *Learning to lead in Higher Education*, Routledge..
- [5] Elmgren, Hedin, Helander (2000): *And suddenly I became the director of studies*, Unit for development and evaluation, Uppsala University.
- [6] A.-S. Henriksson, S. B. Eriksson, M. Elmgren, K. Bolander Laksov, K. Mårtensson, T. Roxå, M. Weurlander, P. O. Ågren (2011): *Educational leaders as key agents in developmental work*, Conference proceedings, SUHF (Sweden's Higher Education Institutions' Organization), Leading Higher Education, Karolinska Institutet, Stockholm..

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