WHO WINS FROM ACADEMIC CONSULTING?

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ABSTRACT
University teachers who start teaching right after graduation have not used and developed their knowledge professionally thus they have never had the opportunity to test their acquired knowledge in practice. This results in teaching that tends to be heavily theoretical because the teacher teaches what he/she has learned in studies, instead of teaching the knowledge gained through professional experience. Unfortunately a teacher can feel insecure when not knowing if their teaching reflects currently used methods and/or appropriate tools. An effect of this can be that teachers who feel insufficient in their role as teachers. The aim of this paper is to see if academic consulting not only increases the practical experience of the teacher, but also helps the teacher in their role and gives them a better understanding of what the state of the art is.
While some schools have some cooperation with the business community, both in student projects and research projects, although it is not common with external non-research consultation projects, which are conducted by the university teachers. A questionnaire was sent to both teachers and students' asking them of their experience of academic consulting's benefits to the classroom experience. As a follow-up were several interviewed, along with clients to gain more insight. The results showed that teachers, students and the clients benefited from these types of projects.

Keywords: Academic consulting, teaching.

1 INTRODUCTION

"The goal of teaching should be to inspire a student to continue to enjoy learning and to eventually connect this inspiration to proficiency in the subject" [1]. There are many techniques that can be used to inspire students, such as, practical examples and real-life experiences which can help the students to relate to the subject at hand. Practical examples can tantalize student's interest in a subject. When teachers use examples that are experienced on a first hand basis, they can be more interesting because the teacher understands whole concept and why. Although examples that come from external projects may be helpful in the teaching process, they are not so common. These types of examples can be gained from projects that come from academic consulting. Academic consulting is when faculty members conduct projects for external parties, those who are outside of the school system.
One problem is, from an administrative point of view, that academic consulting is seen as a competition of teachers time; taking time and energy from teachers, thus limiting their ability to perform as well as expected in the classroom. One large study showed that more than half of the institutions they studied did not approve of other work, e.g. being a consultant, even though it did not compete with their faculty work [2]. Academic consulting has been seen to have negative connotations and a lesser academic value [2]. Although, it has been shown that some high ranking universities do encourage the faculty to conduct consulting by allowing them to consult 20% of the time [3] and it has been observed that top engineering universities faculty spend 10 - 15% of their time consulting [4]. Another smaller study has shown that academic consulting is acceptable at some institutions, as long as the employment does not interfere with the assigned duties of faculty. It should be recognized as a valuable experience and encouraged by the institution [5]. In order to reduce unnecessary conflicts, it is necessary to have a policy that allows for the faculty's professional development, while not interfering with the institutional obligations nor its goals and objectives.
Studies on academic consulting with a focus on commercial gain are almost nonexistent [6]. Even though it is rather common, academic consulting mainly refers to consulting for the purpose of research. Although some surveys suggest that there is a tendency that academics shun industry

because it can distract them from academic relevance [7]. Another way to look at this is to see what types of firms use academic consulting. It has been shown that firms gain a competitive edge when being assisted through university research and the results show that research conducted with universities often results in new products or services [8]. Laursen, Reichstein and Salter [9] found that geographical proximity reduces the propensity for companies to collaborate locally with universities in UK. In addition to that, Mueller [10] states that the more firms draw from knowledge generated at universities, the more the region will experience economic growth. Studies also suggest that the level of academic engagement goes hand in hand with academic success in terms of the positive relationship between engagement and government grants and engagement and scientific productivity [11].
Three types of academic consulting have been identified: opportunity-driven, commercialization-driven and research driven [12]. Material found in this study shows that the studies only took into consideration how teaching is affected by research performance in that sense that time constraints can reduce or limit the teacher's ability in their effectiveness. Some evidence shows that research productivity helps teaching proficiency [13] while other studies have shown no relationship [14]. One area that is lacking research is the concept of, how the use of academic consulting affects the task of teaching and, in turn, learning in the classroom. Another question that should be considered is how teachers experience from external tasks, i.e. consultancy, research projects, etc., could positively affect the teachers classroom efficiency. That is, do teachers use their newly gained knowledge and experiences to complement to what is being taught in the classroom?
It is possible that knowledge and practical examples gained in academic consulting projects can be used to help improve the learning process. By adding practical examples from actual projects, teachers may help the students learn and absorb new and important information with little awareness of effort, since they are taught both the theoretical and practical end of things. This absorptive capacity is spoken of as the capacity to identify and learn knowledge and then apply it to other activities [15]. In the case of academic consulting what is learned in the projects are then applied in the classroom.

1.1 Purpose

The main purpose of this paper is to find out if results from non-research academic consulting projects are used in the teaching process and how academic consulting can help teachers become more confident and authoritative

2 METHOD

2.1 Participants

Requests via e-mail were sent to teachers at a university in northern Sweden and students who studied a specific course where examples from academic consulting projects were used. The website was made available and was closed after seven days. The teacher's ages were 39 to 64, their teaching experience was 7 to 38 years

2. 2 Questionnaires

The teachers' questionnaire was made available and sent to 21 teachers, 33 percent responded. It consisted of seven questions. The questions were as follows: During your employment at the university have you ever done any non-research oriented consulting project?; Do you think that the consulting increased your competence?; Have you had to learn new techniques or tools to carry out the consultancy projects?; Has consulting benefited you in your role as a teacher? If yes, describe how; Are examples from consulting used in your teaching?; According to your experiences, what are the positive and negative aspects of academic consulting?; If there is something you think that this questionnaire does not address, I would be grateful for your comments?
The students' questionnaire was made available and sent to 92 students, 82 percent responded. It consisted of six questions, which were as follows: Are you aware that teachers in your program of study are engaged in consultancy projects?; Do teachers of the Design courses use examples from external consulting? If yes, did it affect the teaching in any way and how?; Do you think the teacher will be more credible using examples from consulting?; Would it be interesting if the teachers would have regular seminars with short presentations of completed projects?; If there is something you think that this questionnaire does not address, I would be grateful for your comments?

2.3 Interviews
Students and teachers were randomly chosen to give more specific details about responses from the questionnaire. Clients from the consulting projects were interviewed for feedback.

2.4 Limitations
A low response rate from teachers was due to the method the survey was sent out. A mailing list was used and there was no guarantee that everyone on the list received the questionnaire. On top of that several teachers stated that they chose not to respond since they have no experience of academic consulting projects. The industrial feedback was communicated through an open-ended interview, thus making it difficult to make exact comparisons.

3 RESULTS

3.1 Teachers
Overall, the teachers conducted on average 10 to 15 consultancy projects each year. These ranged from a total of a few hours up to 40 hours. The nature of the projects varied from product visualization to product design, 3D scanning and construction of physical models and prototype development. Some examples of completed projects were eyewear design, graphic design, concretization and commercialization of innovations, interactive instructional videos, physical model for landscape architects and the visualization of innovation in order to apply for a patent. These projects were not conducted for research purposes and have not generated any papers or other research material. The main objective is instead to bring in external funding and to support the department's finances for those who do not teach fulltime.
The teachers at the university had a long tradition of conducting commercial product development projects for local and regional companies. It was traditionally seen as a way to raise funds. It is true that some university teachers lacked experience in commercial work, as they often take a teaching or research position immediately after graduation. In turn, teaching tended to be heavily theoretical because the teacher teaches what he/she has learned in their studies, instead of teaching the knowledge gained through professional experience. Teachers who have not worked with commercial projects came in contact with industrial projects only through the student projects that were conducted together with the industry. Another problem that arose is that when a teacher lacks knowledge and experience from working in commercial projects they have some difficulty in providing adequate supervision to students. The courses taught by a teacher who is engaged in external projects, is able to use their experience in teaching. They are more often up to date and can relate better to the tools and methods used in the industry, making the students' education more valuable in the eyes of the industry. From an economic point of view, it is better to run larger projects that extend over a long period of time, but since the main task of the teacher is to teach, the teachers thought that shorter projects are to be preferred. It is simply easier to work with less time-consuming project between classes. Most of the clients who have engaged the teachers at the studied university have been satisfied with the result of collaboration and many of the design projects have resulted in products.
The teachers also responded that a positive result of this was that student's showed greater interest in the classroom when these types of projects were used as examples because they had a direct application. They also responded that they are able to convey acquired experience, of more practical nature, to the students. Another response was that the teacher felt more credible in the eyes of students when using tools and methods used tangible in a commercial project.

3.2 The students
A large majority, 85%, of respondents, were aware that their teachers conducted external consulting. In addition to that, 91.5% expressed that the teachers were more credible when they use examples from consulting projects in their teaching. The quantity and quality of advice from students to teachers about what, how and why examples from real projects should be used were,, for example: "A seminar series would be interesting. It must, however, address the lessons learned from the project, such as what went good/bad, the interaction with the customer and what you could have done differently, etc." Another quote that summarizes the student's opinion about their teachers consulting is: "I get a better connection between the course and working life today. It feels like the teacher's knowledge in his/her field is up to date." Recurring comments in the open questions were that students would like to see

teachers use examples from consulting more often in courses and it should be a recent project. They also responded that they felt that there was a better link between the educational system and the outside world.

3.3 The industry

The Norrbotten County in Sweden currently has the highest economic growth in Sweden [16]. Much thanks to the establishment of a large Internet companies' server halls, but also a Science Park with close geographical location to the university. Twenty new companies were established in the Science Park in 2012, which means that there are now a total of 98 companies in the science park [16]. Many of these companies chose to have close collaboration with the university. Entrepreneurs who engaged the university to carry out development projects were often very pleased with the collaboration results and have chosen to use the university again in new projects. "We have tremendous benefits of collaborating with LTU. I have a feeling that business owners and entrepreneurs in my situation do not understand what a resource it is to engage the university and it's a shame" says the founder and designer of Polaris eyewear Staffan Preutz [17]. The studied university collaborates more often with companies in the local and regional area than with distant companies.

4 DISCUSSION

The teachers showed that the opportunity to work in commercial projects had a twofold benefit; it helped them to increase their expertise in their field and, also, verified to them that their knowledge is relevant outside of academia. It also showed that new knowledge had to be obtained in order to complete some projects. The results of both the teacher's survey and the student's survey showed that the use of examples from consultant projects made the teaching sessions more interesting. They are more often up to date and can relate better to the tools and methods used in the industry. A result of this was that teachers felt more confident in their role as teachers. A negative aspect of academic consulting may be that the university competes with consultancy work from design firms in the industry. A university is a governmental institution that is primarily funded by the state, which gives them the opportunity to have greater resources in terms of knowledge and technology than many design firms. Therefore, it is important that universities do not market themselves or seek out potential clients, and keep market prices in order not to compete with design firms.

It is easier to work with shorter projects since they are easier to handle in parallel to the course schedules. Although this paper only deals with commercial projects not all projects are strictly for research or commercial purpose only. There are crossovers and sometimes a commercial project can give birth to a research project and vice versa. Thus commercial academic consulting can also be beneficial to research. A university where employees not only conduct research but also perform commercial projects will become more visible in the community and industry, which consolidates the university as a knowledge stronghold even more. New jobs can also be created when local companies hire competence from the university, letting the company to grow. There is no exact answer on how much academic consulting affect the community, but we know that growing companies give the community a general increase in growth. The more jobs created, the more incomes to the municipality. An increasing number of jobs also increase the chance that students remain in the area after graduation so that knowledge is retained in the region. One benefit is that skilled graduates are able to apply their knowledge in firms [18]. On top of that, personal contacts developed with firms that are a valuable source for further work and possible contact points so that students can gain access to firms.

The result of the surveys indicates that the teacher's role is enhanced when knowledge is verified, improved and updated through academic consulting, but perhaps it can be strengthened further by highlighting the results of academic consulting other than as small elements in courses. For example, a periodic seminar series, with short presentations of completed projects, could perhaps serve as a forum for highlighting academic consulting and communicating knowledge and experience that come from consulting projects in a better way and it is easy to forget what lessons learned when the main purpose of academic consulting is to make money.

Several businesses have chosen to use the university for help in their work. However, in some cases, companies have complained about unfair competition when the university carries out commercial projects with the help of state-funded staff and equipment, although cooperation has continued at a steady rate. Small companies with few employees often lack specialized knowledge and therefore choose to engage universities. It has been shown that geographical proximity reduces the propensity

for companies to collaborate locally with universities in UK [9]. This is also true for the university studied. A reason for choosing the university has been due to the already long distances between communities in the northern part of Sweden. The businesses expressed a need to get necessary expertise that could help them stay competitive and the university was part of this solution. In this study it was a win-win situation for both the businesses and the university.

5 CONCLUSIONS

The results showed that academic consulting can help teachers become more confident and trustworthy. They are more often up to date and can relate better to the tools and methods used in the industry. The students felt that the teachers became more credible and the teaching sessions were more interesting when examples from real projects were used. Companies that engaged the university in academic consulting found it to be a win-win situation.

6 FUTURE WORK

This is a rather small study only covering one university in a fairly remote part of Europe. In order to draw more accurate conclusions a larger study has to be made, where several universities in multiple countries are included. Whether and how the academic consulting differs between institutions and countries would be of particular interest to study, but also how the industry uses the expertise of universities for commercial purposes.

REFERENCES

[1] Hagadus-McHale, F., Multiple intelligences: Creatively engaging middle school students in the foreign language classroom, Inter-disciplinary.net, retrieved April 29, 2013.

[2] Boyer, C.M. & Lewis, D.R., Faculty consulting: Responsibility of promiscuity?, The Journal of Higher Education, Volume 55, Numbers 5, 1984, Pages 637-659.

[3] Schmoch, U., Interaction of universities and industrial enterprises in Germany and the United States – A comparison, Industry and Innovation, Volume 6, Number 1, 1999, Pages 51-68.

[4] Abramson, H.N., Encarnação, J., Reid, P.P. & Schmoch, U., Technology Transfer Systems in the United States and Germany: Lessons and Perspectives, 1997, National Academic Press, Washington.

[5] Bercovitz, J. & Feldman, M., Entrepreneurial universities and technology transfer: A conceptual framework for understanding knowledge-based economic development, Journal of Technology and Transfer, Volume 31, Number 1, Pages 175-188.

[6] Teague, G.V., Faculty consulting: Do universities have “control”?, Research in Higher Education, Volume 17, Number 2, 1982, Pages 179-186.

[7] Howells, J., Nedeva, M. & Georghiou, L., Industry-Academic Links in the UK, Prest, University of Manchester, 1988.

[8] Pavitt, K.L.R., Public policies to support basic research: What can the rest of the world learn from the US theory and practice? (and what they should not learn), Industrial Corporate Change, Volume 10, 2001, Pages 761-779.

[9] Laursen K, Reichstein T & Salter A, Exploring the Effect of Geographical Proximity and University Quality on University–Industry Collaboration in the United Kingdom, 2010, pages 507-523

[10] Mueller P, Exploring the knowledge filter: How entrepreneurship and university–industry relationships drive economic growth, Research Policy Volume 35, 2006, Pages 1499–1508

[11] Merton, R.K, The Matthew effect in science. The reward and communication systems of science are considered, Science, 159, 1968, pp. 56–63

[12] Perkmann, M. & Walsh, K., University-Industry relationships and open innovation: Towards a research agenda, International Journal of Management Reviews, Volume 9, Number 4, 2007, Pages 259-280.

[13] Hayes, J.R., Research, teaching and faculty fate, Science, Volume 234, 1972, Pages 227-230.

[14] Alaemoni, L.M. & Yimer, M., Colleague rating, student rating, research productivity and academic rank in rating instructional effectiveness, Journal of Educational Psychology, Volume 64, 1973, Pages 274-277.

[15] Cohen, W.M. & Levinthal, D.A., Absorptive capacity: A new perspective on learning and innovation. Administrative Science Quarterly, Volume 35, Number 1, 1990, Pages 128-152.

[16] Dagens Industri 13 December 2012
[17] Centek 2012 [Online] http://www.centek.se/sv/projekt/foretagsbron/goda-exempel/universitets-kompetens-ger-glasogon-form/, retrieved February 18 2013
[18] Gibbons, M. & Johnston, R., The roles of science in technological innovation, Research Policy, Volume 3, Number 3, 1974, Pages 220-242.