GUEST LECTURES IN IT EDUCATION – RECOMMENDATIONS BASED ON AN EMPIRICAL STUDY

Birgit R. Krogstie and John Krogstie,
  Norges Teknisk-Naturvitenskapelige Universitet (NTNU)

Guest lectures are often a welcome and inspiring event in a course, potentially demonstrating the real-life relevance of the syllabus. It can however be challenging to successfully incorporate a guest lecture. To investigate such challenges, we conducted a study among faculty and students in a university department offering bachelor and master programs in IT. The results shed light on the importance of guest lectures, which courses are fit for guest lectures, the role of personal networks and factors that may prevent guest lectures from being arranged successfully. From this we propose a set of issues that should be addressed by a university department to provide support for the inclusion of guest lecturers in courses and study programs. As a pointer towards further work, we briefly address what support tools might be provided.

1 INTRODUCTION

As a lecturer of a course in a bachelor program in IT, one of the authors of this article recently arranged one of the mandatory meetings between the student reference group and the teaching staff. The course had been run three times before, then and now taught by two lecturers who divide the teaching according to their areas of expertise. The curriculum – which covers core aspects of user centered design and includes a set of rather practically oriented group exercises related to a realistic case – seems to be reasonably well understood, taken from exam results. The lecturers are convinced that the course combines theory and practice in a way which makes it very relevant for work life. How come, then, that the students do not show up, except for one small group of faithful listeners? Is it just due to the well-known tendency of this particular class to be bad at attending lectures? The reference group told us: The class might have been better at showing up had they been convinced from the beginning that the course was really relevant for work life. Had, for instance, the guest lecturer visited not towards the end of the semester but rather in the beginning of the course. And had he been giving a lecture about important things from the syllabus, to show that they are used for real, out there in real businesses. Admittedly, this was useful input to us – next year we will follow the suggestion, with hopes (but no guarantees) that class attendance will increase!

This little story was chosen as an introduction to the paper because it illustrates at least two points about guest lectures: 1) The students see them as important, and 2) How we go about organizing them, matters.

The research literature uses the terms "guest lecturer" and "guest speaker" about the same thing (Alebaikan, Reem A. 2016); in this paper we will use the term "guest lecturer".

More specifically, by *guest lecturer* we mean a person from industry or the public sector, or a person from another part of the higher education institution (from now on referred to as "the university") or from another university, who comes for a visit to give a *guest lecture*, which often takes the form of a traditional lecture that typically lasts for one or two hours.

The guest lecture is usually held on the campus of the university, but it may also in some cases take place at the site of the guest lecturers' organization. (A more extensive site visit would be considered an excursion.)

Typically, a guest lecture is part of a single course, the lecture topic being relevant to the contents and learning goals of that course and the students of the course being the primary audience (although a larger audience, e.g. other students and/or faculty staff, may be invited). The lecture may sometimes be arranged more generally for a class/cohort or research group (e.g. all master students and faculty within a particular field) rather than being linked to a single course, but in this paper we will mainly address guest lectures that are connected to single courses.

Furthermore, we distinguish between guest lectures and presentations intended for marketing/recruitment (often followed by food/drink, mingling and even job interviews) – such events may for instance take place through an employer's collaboration with student organizations and/or in the context of career fairs. During a guest lecture, the lecturer typically uses a couple of slides on presenting his/her organization (for which the purpose is indeed, most likely, some marketing of the organization as an employer), but this should not be the main topic of a guest lecture.

For simplicity, we will refer to the person responsible for a course (e.g. a professor, associate professor or assistant professor) as the *teacher*.

As faculty in higher IT education in a Norwegian university, we have the following experience:

- Guest lectures can often be inspiring and interesting, to students and faculty alike
- Industry contact is desirable to relate the contents of university courses to practice
- There seems to be fewer guest lectures, and less attendance of guest lectures, than many would prefer

However, we realized that we did not have a good overview of current practices and perceived challenges with regards to guest lectures. Why are guest lectures arranged? Who is invited as guest lecturers? What gets in the way of arranging a guest lecture? And, based on these and similar questions, what can be done to encourage and support faculty in successfully arranging guest lectures in their courses?

To explore these issues, we initiated an empirical study, the results of which are presented in this paper.

The paper is organized in the following way: In the next section, a short background to the field is provided. We then present the research method and the case used, followed by the results from the survey. We end the paper with a discussion of the results providing some initial guidelines to improve the effect of guest lectures.

2 BACKGROUND

The field of IT is characterized by advanced technology, rapid changes in state-of-the-art and need for academia to stay in touch with industry practice (and vice versa) (Ankrah, Samuel and AL-Tabbaa, Omar 2015; Kamoun and Selim, Said 2007). This goes for the technology itself (hardware and software), the methods used in the development process (e.g. requirements, design, coding), knowledge about human interaction with the technology (individually and through cooperation/collaboration), and knowledge about technology maintenance and support. Similar challenges of keeping academia and industry connected can be found in other engineering disciplines as well as professions like medicine and teaching.

Bringing people from industry into the classroom can be done in different ways, e.g. by having them take the customer role in student projects (Andersen et al 1994) or by being mentors, i.e. professionals who meet with students multiple times during a given time period (Gibbons 2012).

In IT education, guest lecturers can aid students in finding new IT career opportunities and also help them develop positive attitudes towards the IT profession (Kamoun and Selim, Said 2007). Other fields, like medicine, teaching, marketing (Merle and Craig 2017) and tourism have also conducted research on the use of guest lectures, with insights potentially valuable to IT education. For instance, studies have looked into the benefit of guest lectures for university faculty and professionals from industry (McCleary and Weaver 2009). It is important to keep in mind that there are several stakeholders involved in a guest lecture, and ideally, the lecture serves the objectives of both students, faculty and industry.

Also, there is a need to consider the goals of the higher education institution beyond the faculty involved in the specific course arranging a guest lecture. In particular, this applies to the need to develop and maintain an active and relevant industry network on an institutional level. Such a network may be highly useful with regard to one of the challenges of guest lectures: making sure the teaching staff have access to and knowledge about relevant persons to ask, i.e. the potential guest speaker or someone who can help you get in touch with her/him. Industry networks among faculty in higher IT education tend to be personal (Krogstie, Birgit 2017), which is likely to make it easier for those with a good personal network to find an external speaker with a relevant background and perhaps interest in maintaining the professional connection.

Some research literature points to the need to increase the quality of guest lectures by not just making the lectures entertaining, but ensuring that they have good learning outcomes. One approach is to make students actively prepare for the guest lecture by formulating questions for the speaker (Dalakas, Vassilis 2016). To make sure students prepare good questions, Dalakas and Vassilis made the formulation of questions a mandatory and graded assignment. A good grade required good quality questions referring to knowledge from the course, i.e. relating an issue to a meaningful context. The guest lecturer received the students' questions as preparation for the lecture and answered a selection of the questions during the lecture. This approach has multiple benefits, both with regards to students' preparation and by guiding the guest lecturer with respect to the course curriculum and the knowledge and interests of the audience.

3 RESEARCH METHOD

The research for this study was conducted as a case study with several data sources. The case is a department of IT at a Norwegian university providing higher IT education. In the paper we will refer to them as Dept and the University, respectively.

The current organization of the University is a result of a recent merger between an old university and some university colleges. The IT department is spanning multiple campuses and including people from the old university and two prior university colleges. This is relevant in our present context, as practices linked to guest lectures have varied in these prior organizations.

Steps involved in arranging a guest lecture, generally involve:

- Plan to include it in the course schedule (whether making the appointment before the semester starts or reserving a time slot without further details, assuming it will be possible to find a guest lecturer later)
- Invite a guest lecturer. Often, this is a person that the teacher has used as a guest lecturer before.
- Do some marketing towards the class and possibly others (e.g., other classes, faculty)
- Arrange lecture

The main source of data is a questionnaire survey among faculty in December 2017. Drafts of the survey were subject to multiple feedback rounds with faculty members and accordingly several revisions.

The survey was distributed to all the permanent teaching staff (85 people in all) by email with a link to the university intranet. The survey was implemented in a web-based tool (Google forms) in two versions, with both a Norwegian and an English version available, as not all the staff are fluent in

Norwegian. The survey was anonymous, with campus and type of position as the only person-identifying data. A reminder with a new deadline was also sent out.

24 answers were submitted, which means the response rate was 32%. Although this is an acceptable response rate, the limited number of responses made us chose not to do any more advanced statistical analysis of the results.

The data was transferred to Excel, and the Norwegian and English answers combined. Much of the data was translated to English for purposes of publication.

In order to capture the students' perspective, a more limited data collection was made by use of a brief questionnaire survey distributed to the students in a 2nd year class of Bachelor students in an IT study program in January 2018. The questionnaire was handed out on paper and answered during the last minutes of a lecture as an occasion for the students to give their opinions on the use of guest lectures in general and also influence the use of guest lectures in the course in question. As this was the first lecture in the semester, almost all the students in the class (ca 40) were present and filled in the form, giving a high response rate.

Additionally we also use some data from a study conducted in spring 2017 about the use of industry networks by faculty in higher IT education (Krogstie, Birgit 2017). This study was based on three focus groups, each with 3-5 faculty members, at different campuses in two different universities. Most of the participants were managers of study programmes. The duration of each interview was 1,5 hours. The overarching topic of the interviews was the use of industry networks by university faculty, for instance to get customers for student projects. The study uncovered challenges of making networks sufficiently available for all faculty members through institutionalization (including documentation, sharing, administration, tool support) while at the same time acknowledging that industry networks in academia are often personal, and also a personal asset. The research method in this study is further explained in (Krogstie, Birgit 2017).

One of the authors of the paper is head of the Dept, which means they have relevant insight about the institutional/management perspective. This author was not given access to the raw data. To avoid violating the privacy of the respondents, the university campus and job category fields in the data were removed before the data were analyzed.

4 RESULTS

The findings from our study indicate that faculty generally consider guest lectures to be valuable, the majority of our respondents (see Figure 1) considering the ideal to be one or more such lecture each semester in each course or at least one per semester for each class/student cohort. A substantial percentage of respondents (41%) however believe guest lectures should be limited to courses *for which such lectures are relevant* (a formulation of which the interpretation was left to the respondents). None of the respondents answer that there should be no guest lectures.

To look more closely into what *types* of courses are fit for guest lecturers (Figure 2), we provided some alternative answers based on feedback to pilot versions of the faculty questionnaire. The first answer alternative – "Any course" – covers/excludes the alternative answers. An interesting result from this data is that half of our respondents (14 out of 27) thought guest lectures are adequate in *any* course.

The four answers given under "Other" point to some additional reasons to consider guest lectures to be relevant for a course: 1) Courses in which the topic of a guest lecturer's work, is syllabus; 2) Courses with a clear industry relevance; 3) When it is desirable to focus on the current status [in the field] , how things are done in practice, and motivating for effort; and 4) Courses that are not too theoretical, but to some degree have a relation to practice.
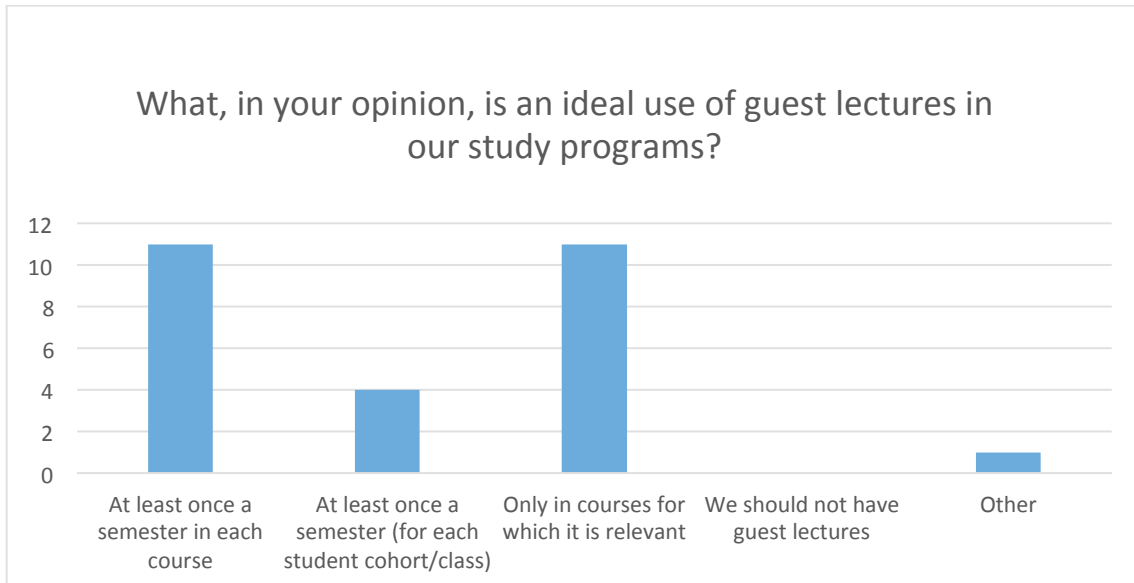
Figure 1: Faculty's response to the question about the ideal level of use of guest lectures
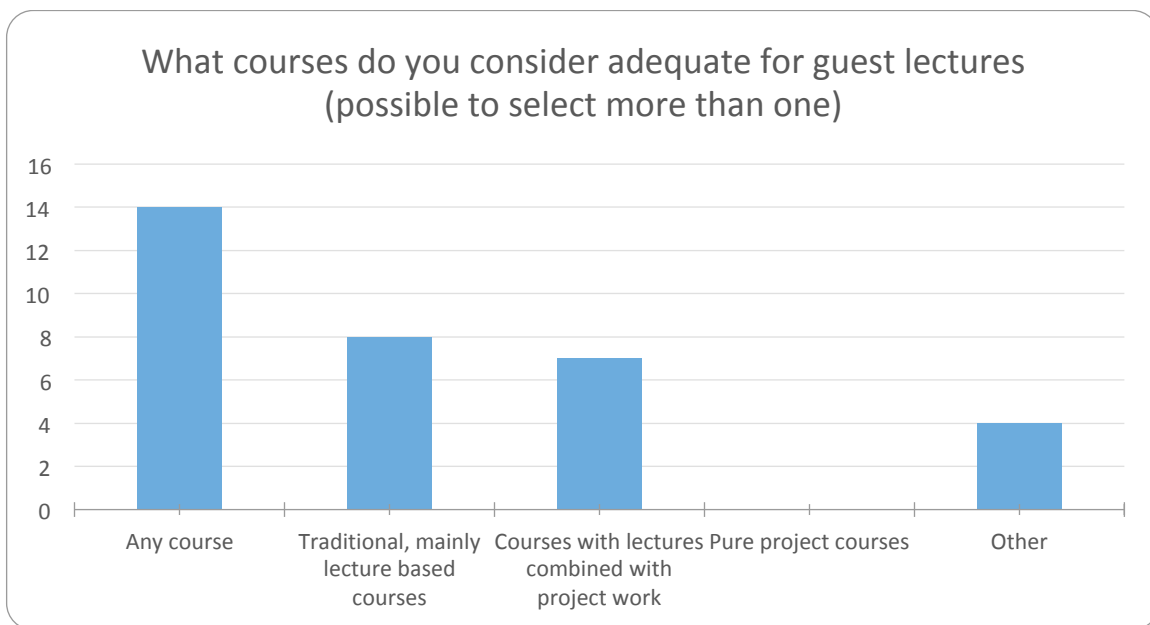

Figure 2: Faculty response to what courses are adequate for guest lectures

As can be seen from Figure 3 and Figure 4, both teachers and students indicate that the most important thing about a guest lecture is to confirm the relevance of the working life of the subject (reservation: this was a predefined alternative in the answers)
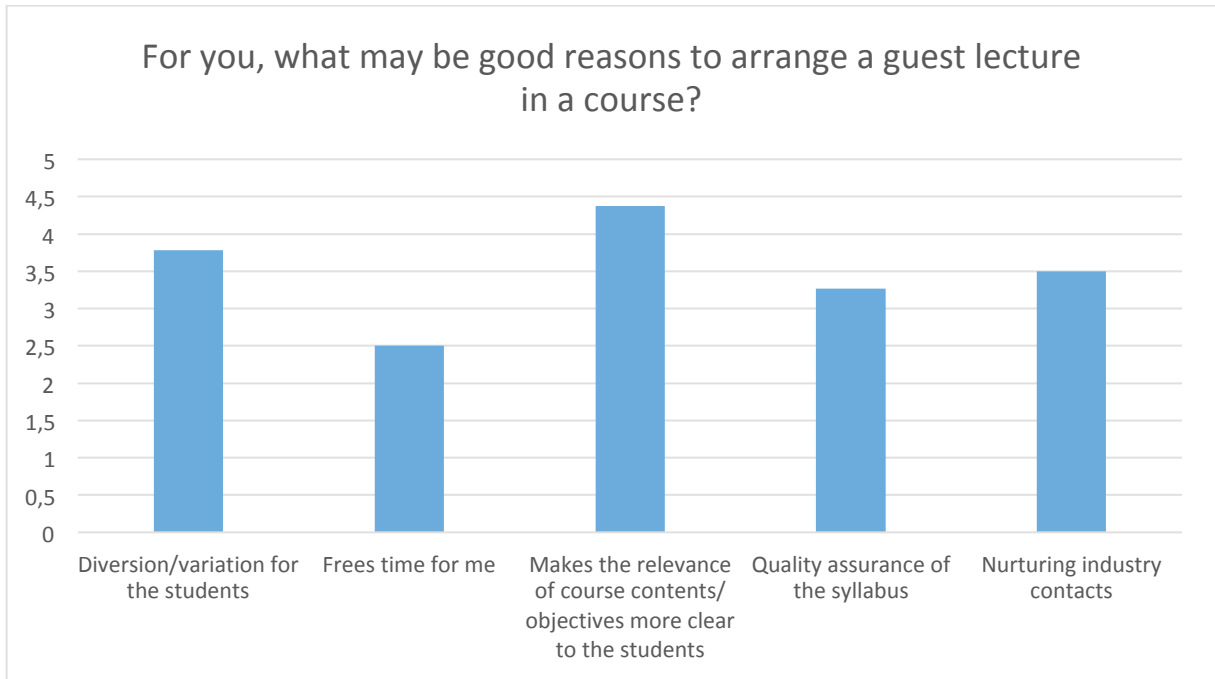
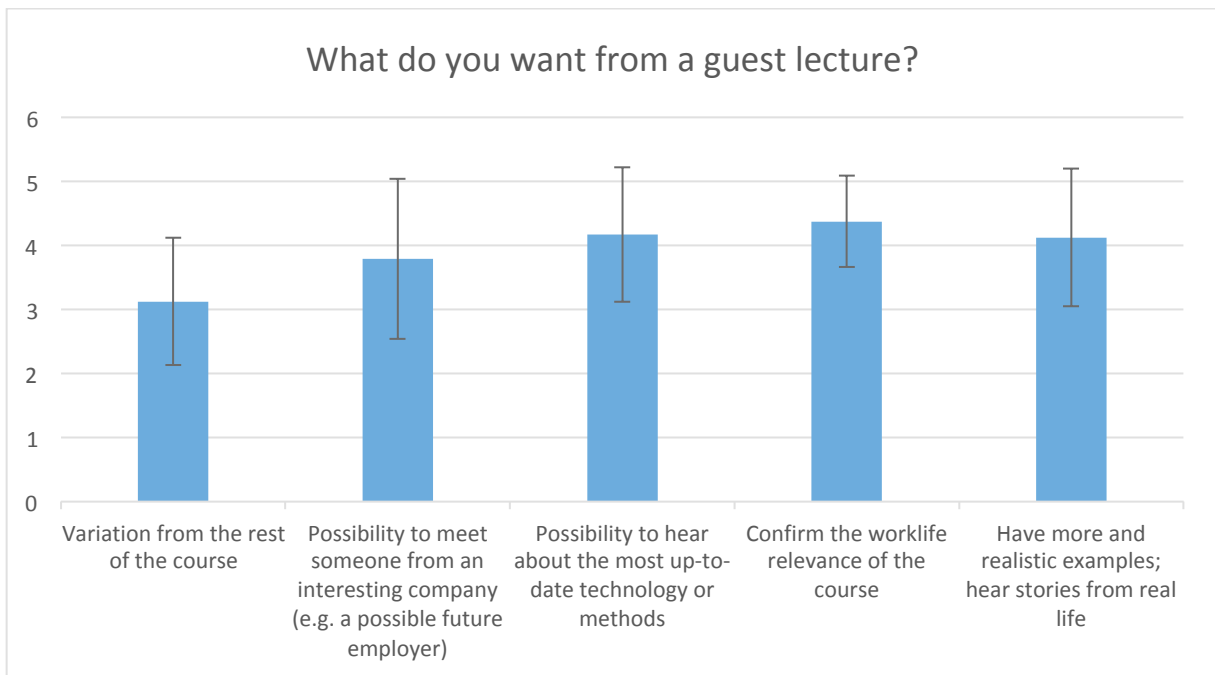Figure 3: Faculty response to the question about good reasons for arranging a guest lecture

Figure 4: Students' response to the question about what they want from a guest lecture

Personal networks play a significant role when faculty arrange guest lectures. The answers to the question "Who do you use as guest lectures" (possible to select more than one answer) are shown in Figure 5
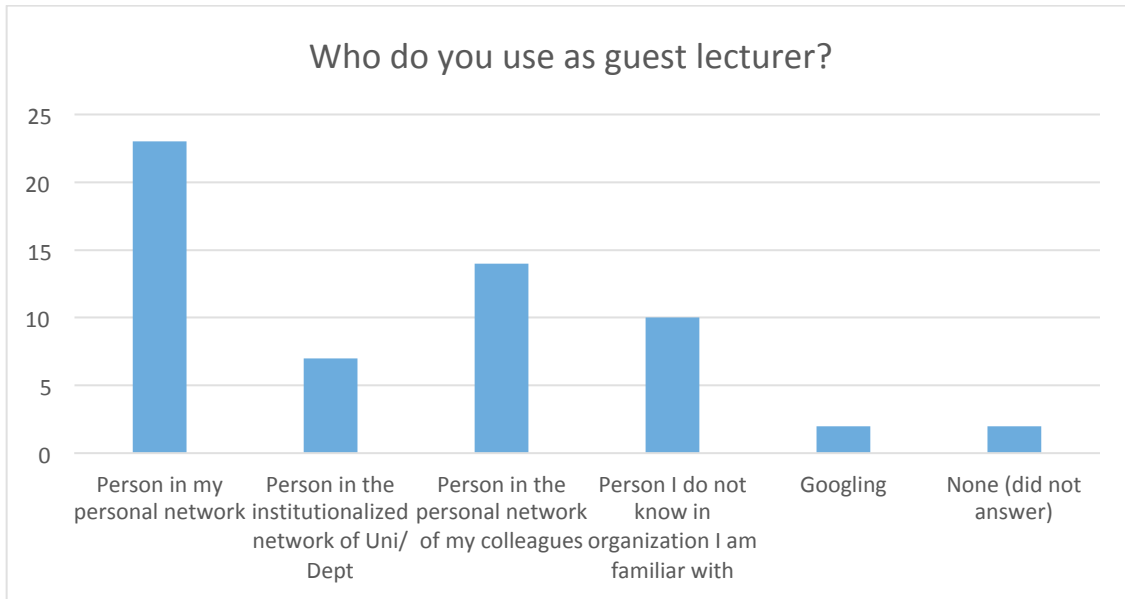
Figure 5: Faculty response to the question about who they use as guest lecturers

The crucial role of personal connections and networks is even more clear from the answer to the question about what was the previous connection to the guest lecturer in the most recent guest lecture arranged by the respondent (Figure 6):
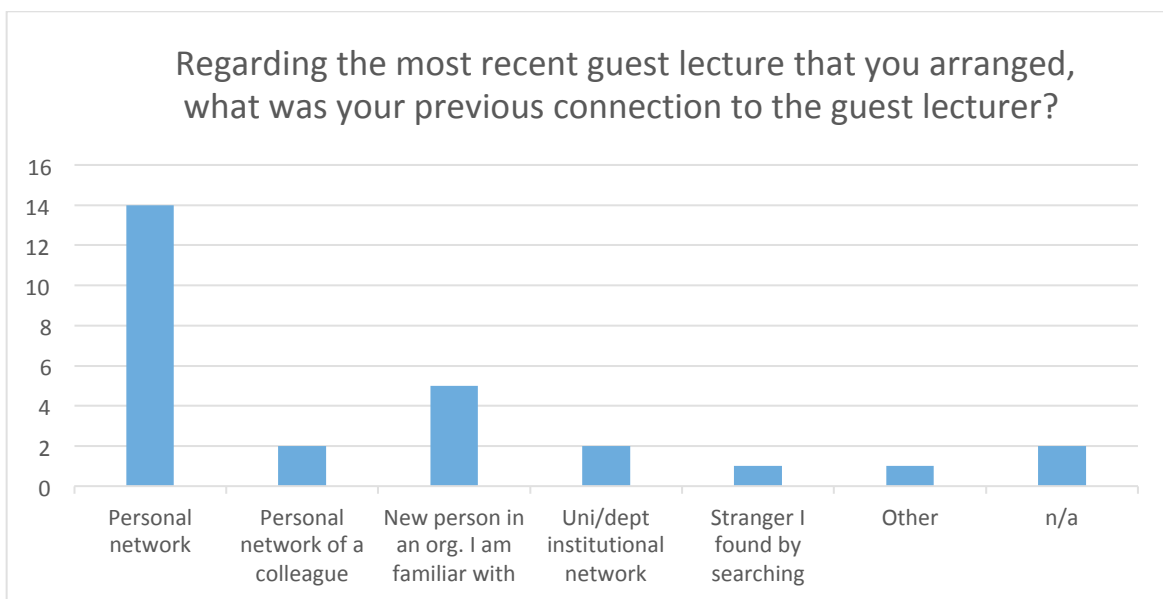

Figure 6: Faculty response to the question about their connection to the person they last used as a guest lecturer

As we see in Figure 7, in 59% of the guest lectures (last guest lecture arranged by each of the respondents), the respondent had used the same guest lecturer at least once before; 37% had previously engaged the guest lecturer 2 or more times, pointing to the stability of such relations.

This finding should be a good sign in light of earlier studies (Krogstie, Birgit 2017) on faculty perspectives of industry networks indicating that stability of a network is highly valued.
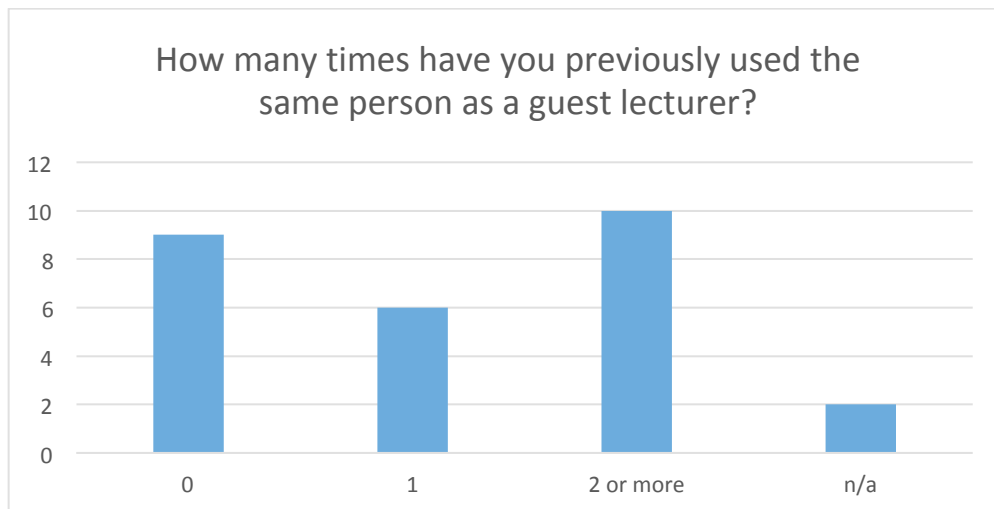
Figure 7: Faculty response to the question of how many times they had previously used the same person as a guest lecturer

Differences in different academic environments (and partly job categories) make the way to obtain guest lecturers and the conditions for doing so vary. Some may have more challenges finding the right person and obtaining the necessary resources. In this regard, there might be a difference between the environments/job categories with a stronger focus on research and those with more focus on teaching and study programmes. In the "old university" and to professors and most associate professors, personal network tends to be heavily linked to research activity (e.g. previous collaboration partners in research projects, network built at academic conferences, network maintained through involving industry partners as external customers of student projects). In many cases such a network might also be more extensive than network obtained through a career of mainly teaching activity. Also in a more teaching-oriented environment, some staff members have had an active role in administering student (mainly bachelor) projects with external customers, and thus have a larger network. The guest lecture survey and the focus groups on industry networks (Krogstie, Birgit 2017) together clearly demonstrate that access to a suitable network of industry contacts – i.e. potential guest lecturers – varies a lot.

The answers to the free-text survey question «How can we achieve a desired use of guest lectures at Dept? Can you think of any actions that would lead to improvement?" should be seen in this context. The list of answers is shown in *Table 1*.

In the table, looking at the answers to the question about challenges, some main issues can be recognized:
- the need for a repository of previous/potential guest lecturers
- the need for a clearer procedure for arranging guest lectures
- the need for financial issues to be easily sorted out
- the need for motivation/incentives.

Answer
Overview of guest lecturers used previously, with contact information
Experience sharing
Specific offers for relevant topics from industry that can be included in the teaching without need for a lot of planning and re-organizing of the course
[I] see no need to increase the use
Simple procedures and an available budget
Make it clear that it is desirable, that there possibly is funding, and info about [it] when there is reason to believe there will be costs. Experience exchange about use of guest lecturers. Generally invitation to participate in <guest lectures>.
Maintaining a group-based list of guest lecturers, with the course responsible faculty member as a contact, for those who want to find out whether the person is a good guest lecturer
Establish contact during the course planning and have a kind of "guarantee" from the guest lecturers organization about when in the semester the lecture will be held.
Delegate budgeting (down) to teaching competent level. Feel free to ask [us] about how to provide better quality of studies through higher quality and volume of use of [teaching] assistants.
Have simple procedures for travel reimbursement for guest lecturers
Encouragement/requests <Norwegian: "oppfordring"> from management
Institutionalize the network, at least with an overview of who has been guest lecturers for whom in which course (to make it easier to first get in touch with the other teacher to assess whether guest the lecturer will fit)
Less teaching workload
Decreasing the focus on learning outcomes and content and increase the focus on students learning to learn. The main problem is that lecturers believe that their "content" is important. The second problem is that lecturers seem to fear negative student feedback. This requires more work on lecturers to realize that the goal is not productivity but learning. It is not how much students know when they leave a course, but how quickly they can learn new material in the area.

Table 1: Free-text responses from the faculty survey

5 DISCUSSION

Based on the overall process described in section 3 and the results from our study, we see a potential to create a simple process model outlining key steps in the process of arranging guest lectures. The main objective of creating such a model is to make explicit the process as a whole as well as the points at which there is a possibility to provide support. For instance, the issues emerging from Table 1 are issues that can be linked to specific points in a more generic process of arranging guest lectures.

The overall model that we propose is depicted in Fig. 7. The elements included in the model reflect steps and issues that emerged from our study as significant for the successful arranging of guest lectures. We put them together in light of our knowledge of the processes at the university as we have experienced them as faculty.

The following discussion will thus follow the structure of the model, briefly addressing some considerations for each step.
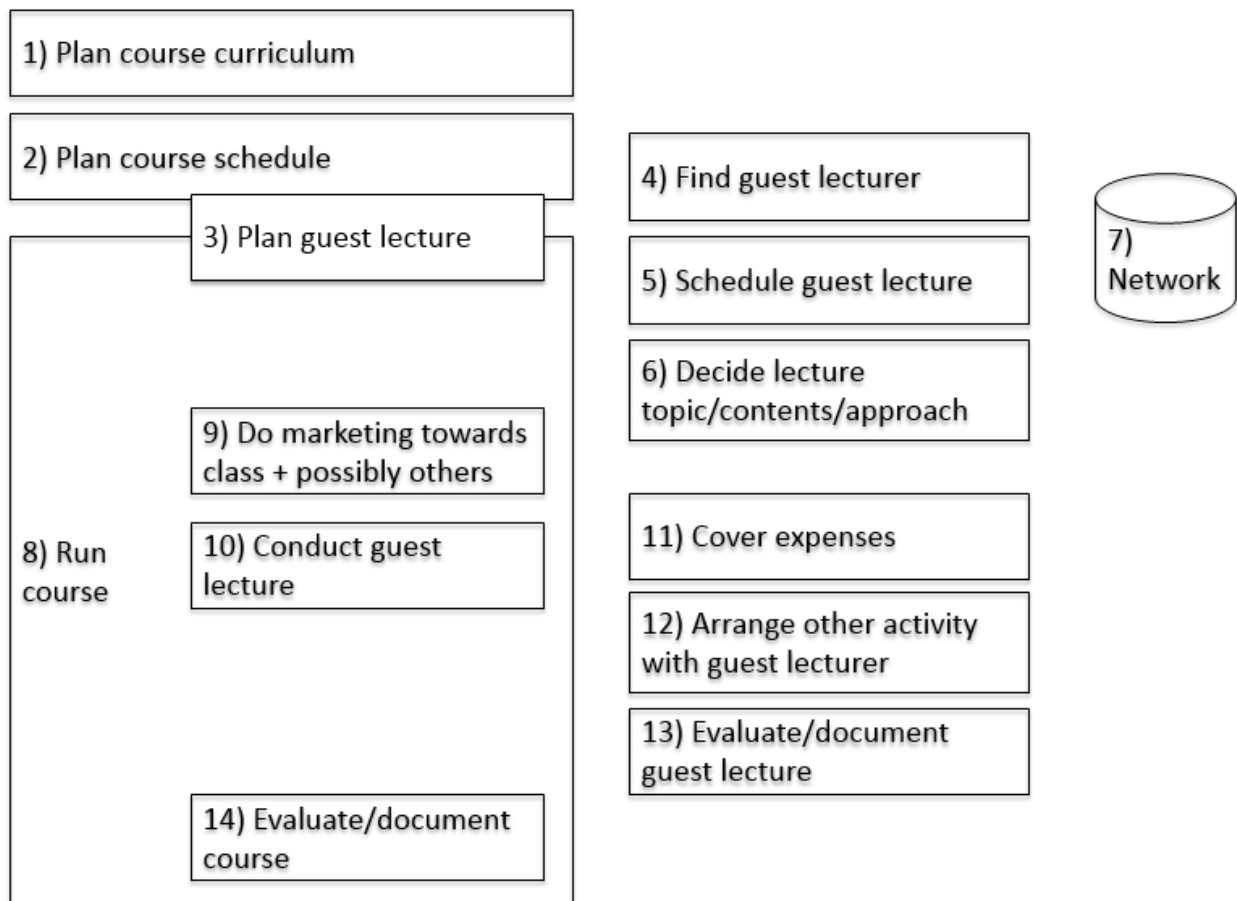
Figure 8: A model of the arrangement of guest lectures

1) Plan course curriculum

When planning the course curriculum, it is often beneficial to already at this stage have guest lectures in mind, to think about topics that can fit. Encouragement/requests from management can be a good incentive to start thinking about having a guest lecturer. If there is a database of previously used guest lecturers (see point 7), the database might be searched for options and ideas.

This said, it should be taken into account that in the view of many faculty members, guest lectures are considered by many as appropriate only for some types of courses, as seen in Figure 2. Accordingly, guest lectures should not be enforced into curriculum planning, only encouraged. The results of our study do not indicate that any kind of course should be excluded from consideration.

2) Plan course schedule

When setting up a course schedule we suggest to, if possible, establish contact during the course planning and have a kind of "guarantee" from the guest lecturer's organization about when in the semester the lecture will be held. On the other hand, if all that can be planned is one or more candidate time slots for a guest lecture while the actual contact is not yet established, this might be and acceptable option.

3) Plan guest lecture

The process of including a guest lecture in a course should be streamlined enough to be considered as useful, tackling the possible issue of work/benefit disparity (Grudin 1988). One should thus minimize overhead – to the largest possible extent utilize what is already there (also required from a point of view of relevance).

Specific tools might be used to facilitate the setting up of a guest lecture – the resulting lecture could, if permitted by the guest lecturer, be made accessible through the repository discussed further in point

7 below, although the normal LMS used for the course might be just as good solution. Tool support might help in linking the lecture to course objectives, specifying topic/abstract in collaboration with course responsible upfront, using this information for marketing to the students, having students sign up to ensure attendance (see point 9 below), and possibly having students submit questions as a mandatory assignment.

4) Find guest lecturer
As we have seen, currently it is the personal network that is most often used as a source of guest lecturers. On the other hand, many wish a more institutionalized network as we see from statements in Table 1, e.g. "Institutionalize the network, at least with an overview of who has been guest lecturers for whom in which course (to make it easier to first get in touch with the other teacher to assess whether the guest lecturer will fit)" and "Maintaining a group based list of guest lecturers, with the course responsible faculty member as a contact, for those who want to find out whether the person is a good guest lecturer" This is discussed further in point 7 with the use of a repository of potential guest lecturer.

5) Schedule guest lecture
As pointed to in the introduction, timing of the guest lecture is important, but both early and late times can be beneficial. If the purpose of the guest lecture is to make students understand the real-world/industry relevance of the course and thus motivate the students for properly attending the course, the lecture should be early. If the purpose of the lecture is to put the acquired knowledge from the course into context and create an occasion for active student participation through questions and answers, a later lecture might work better.

6) Decide lecture topic/contents/approach
The relevance of the lecture to the course is looked upon by many as key to success. To achieve this, one possibility is to provide some guidance and a template to the guest lecturer, requiring the lecturer to link the speech to the learning objectives defined for the course. The template may be filled out in collaboration between the course responsible and the guest lecturer. Whereas this might seem to restrict the freedom of the lecturer, it simultaneously provides support and assurance that the lecture is indeed relevant to the students. Note the dissenting comment to this from table 1. "Decreasing the focus on learning outcomes and content, and increase the focus on students learning to learn. The main problem is that lecturers believe that their "content" is important. The second problem is that lecturers seem to fear negative student feedback. This requires more work on lecturers to realize that the goal is not productivity but learning. It is not how much students know when they leave a course, but how quickly they can learn new material in the area."

7) Network database/repository
Although many faculty members use their personal network to identify a potential guest lecturer, several express the wish to have some overview of previous guest lecturers. Networks to collaborators have primarily been informal and personal at the department. Private and public organizations have regular contact with students, but often with a focus on students approaching finalization.

Some years ago, a more formalized network was established in Dept, to support the contact with students in early years of their studies. Although this network is not primarily geared towards establishing guest lecture arrangements, it has turned out to be a good way to establish new contacts by using the network participants to identify good candidates for guest lectures within their organizations. On the other hand, the knowledge among the staff about the possibilities and activities of this network varies.

There is a balance between the use of personal network vs. systematic, institutionalized, open, and shared institutionalized networks. The latter tends to be more obviously an advantage to the institution, e.g. department, as well as to faculty members who lack an extensive personal network. A disadvantage is the perceived overhead, i.e. effort to document, but also having to give away information which gives a significant individual advantage in academia: your personal network. An

open question (for further research) is whether the latter - potential reluctance to share/give away your assets- is indeed an issue.

A reason to encourage and potentially enforce the documentation of guest lectures/lecturers as part of documentation (point 13) is that it is about the knowledge management of the university department and also about a certain fairness: The size/quality of the network from which guest lecturers can be drawn is partially related to the type of work/position of the faculty member, i.e. proportion of work time (and/or length of career) dedicated to research, which tends to produce a good industry network. The database could be a repository of industry contacts, in this case particularly guest speakers. We propose storing the following data:

- Who was here,
- when,
- talking about what,
- in what course,
- taught by what faculty member
- and, maybe with an assessment of success.

This should be searchable information. It should also link to information about other collaboration activity the same contact is involved in, e.g. providing tasks for student projects.

8) Run course
(see the next points)

9) Do marketing towards class + possibly others
It is important that sufficiently many of the class attends the guest lecture. On the other hand, too much ado about guest lectures might deter faculty staff from initiating them. Marketing can be combined with some additional effort increasing the likelihood of getting good lectures by introducing an element of QA (preparation of lecture (helping guest, staff member and students build common ground and link guest lecture to learning objectives of the course)), as well as learning from experience regarding successful guest lectures.

10) Conduct guest lecture
When conducting the guest lecture, it is fair that the external guest tells a bit about his company. On the other hand this should be limited to a few slides, not turning into a recruitment event, for which other type of arenas exist. Furthermore, active participation from the students is likely to make the lecture more interesting and lead to a greater learning outcome. Well prepared questions, as argued in (Dalakas, Vasilis 2016), can be used for this purpose.

11) Cover expenses
Funding for travel expenses may be a factor enabling or preventing the invitation of a guest speaker, if there is no commonly available source of such funding (meaning the invitation of a guest lecturer depends e.g. on project funding, of which some staff members may have more and others less or none). This needs to be clarified before inviting the guest lecturer in the first place. As mentioned in the comments, one should have simple procedures for travel reimbursement for guest lecturers, possible "Delegating budgeting (down) to teaching competent level "

12) Arrange other activity with guest lecture
Combining the guest lecture with other activity, e.g. examination, research activity, guest lecture in another course, might be a natural way for both the teacher and the lecturer to get more out of the visit.

13) Evaluate/document guest lecture
See point 7 relative to possible repository of guest lecturers on what might be beneficial to capture. As part of this, the permission of the guest lecturer is needed. This might be discussed early on, e.g. at the point of agreeing on the topic of the speech. Also access to the guest lecturer's presentation should be secured.

14) Evaluate/document course
This is part of the overall quality process of the course. One should have in mind to forward the result of the evaluation in 13 to those arranging the course the next time through quality improvement reports. Also, the guest lecturer should be provided with feedback about their performance.

Having thus presented the model, we will briefly address how we intend to use it. We would like to see the model deployed as an aid to supporting the use of guest lectures in our department. One way of using the model is to make guest lectures the topic of a workshop among faculty (and possibly students), addressing how the steps of the model are currently supported and/or should be supported. The model itself might also be modified as a consequence, if participants find it is not fully adequate, e.g. there are steps missing.

Furthermore, the model might be presented at an internal or external website as a kind of roadmap to the arranging of guest lectures. This should include hints and guidelines for how to succeed with each step in the model. Such a presentation would require further work to develop both the visualization and the detail content.

One thing that should be stressed in any presentation of the model is that whereas the model is intended to be useful to the individual lecturer, it outlines a process involving collaboration, sharing, administration and management. To really help in achieving more and better guest lectures, the depicted process needs to be understood by people in different roles who have to contribute in different ways, whether by sharing their industry network or e.g. streamlining the process of getting expenses covered.

Concerning the generalizability of our study, it took place in a specific university; thus, an open question is if the results have relevance to other universities. Global differences have been found with regards to the importance of guest lectures from a student perspective. For instance, a study (Clarke, I. and Flaherty, T. B. 2002) showed that Chinese and British students (in the area of marketing) attributed less value to guest lectures (relative to other teaching strategies) than what students in the US did. This means we should be careful in generalizing about the importance or popularity of guest lectures, however, findings about challenges to, benefits of, and support for guest lectures might still have relevance for those who want to arrange them. The model presented in our paper can be a useful starting point for discussing how guest lectures are currently supported, and might be better supported, in any higher education institution.

6 CONCLUSION

Summing up the results from our empirical study, we see three main findings. First, both teachers and students indicate that the most important thing about a guest lecture is to confirm the relevance of the working life of the subject. Second, personal networks are essential. Third, differences among academic environments, and partly job categories, make the way to obtain guest lecturers and the conditions for doing so vary. Some faculty members may have more challenges finding the right person and obtaining the necessary resources.

We have had a first look at some aspects of arranging guest lectures that seems necessary for guest lectures to be a successful part of the academic offerings. They include:

- Institutionalization of networks to enable sharing of knowledge about appropriate guest lecturers
- Having the necessary available resources, and make sure the teaching staff knows about them
- Ensuring an educational anchoring / motivation. Guest lectures are there not only to put some spice to an existing course, but ought to have a didactic purpose

The proposed model may have a role in the further exploration of these issues by creating a structure for discussing the process and more specific ways of supporting it.

As future work, it would be interesting to investigate these topics in other universities, both in Norway and abroad. It would also be interesting to follow the introduction of the proposed database to see to what extent it supports an institutionalized network, including its effect on the perceived success of the use of guest lecturers.

ACKNOWLEDGEMENTS

REFERENCES

Alebaikan, Reem A. 2016. "Online and Face-to-Face Guest Lectures: Graduate Students' Perceptions." *Learning and Teaching in Higher Education: Gulf Perspectives* 13 (2).

Andersen R, Conradi R, Krogstie J, Sindre G, Sølvberg A
Project courses at the NTH : 20 years of experience. Paper presented at the 7th Conference on Software Engineering Education (CSEE'7), San Antonio, USA Januar 1994

Ankrah, Samuel, and AL-Tabbaa, Omar. 2015. "Universities-Industry Collaboration: A Systematic Review." *Scandinavian Journal of Management* 31: 387–408.

Clarke, I., and Flaherty, T. B. 2002. "Teaching Internationally: Matching Part-Time MBA Instructional Tools to Host Country Student Preferences." *Journal of Marketing Education* 24 (3): 233–42.

Dalakas, Vassilis. 2016. "Turning Guest Speakers' Visits into Active Learning Opportunities." *Atlantic Marketing Journal* 5 (2).

Gibbons, Thomas. 2012. "Course Guides: A Model for Bringing Professionals into the Classroom." In . Raleigh, North Carolina, USA: ACM.

Grudin, Jonathan. 1988. "Why CSCW Applications Fail: Problems in the Design and Evaluation of Organization of Organizational Interfaces." In . ACM Press.

Kamoun, Faouzi, and Selim, Said. 2007. "A Framework towards Assessing the Merits of Inviting IT Professionals to the Classroom." *Journal of Information Technology Education* 6.

Krogstie, Birgit. 2017. "Faglæreres Bruk Av Næringslivsnettverk i Høyere IT-Utdanning." *Norsk Konferanse for Organisasjoners Bruk Av IT (NOKOBIT)* 25 (1).

McCleary, Ken W., and Pamela A. Weaver. 2009. "The Effective Use of Guest Speakers in the Hospitality and Tourism Curriculum." *Journal of Teaching in Travel & Tourism* 8 (4).

Merle, Patrick F., and Clay Craig. 2017. "Be My Guest: A Survey of Mass Communication Students' Perception of Guest Speakers." *College Teaching* 65 (2).