CLOSING THE GAP BETWEEN CLASSROOM AND REALITY THROUGH VIRTUAL BRIDGES

Priscilla Navarro, Linnea Haag, Promporn Wangwacharakul, Jason Martin

Linköping University, Department of Engineering and Management, Division of Quality Management and Logistics,
Linköping, Sweden

ABSTRACT

Online guest lectures serve as an important learning activity for students to bridge the gap between the classroom and the reality of business and has become common during the Covid-19 pandemic. Such lectures enable students to better link theories and concepts to practice and can provide valuable network opportunities for students by facilitating contact with professionals in their field of studies. Online guest lecturing has also proven to have benefits for the course administration such as an easier allocation of guest lecturers and a more effective use of resources.

This paper is part of a pre-study for determining the opportunities and challenges that online guest lecturing can have for students of engineering and management programs at a master level. Specifically, the purpose of the pre-study is to explore how online guest lectures are perceived among students and course directors, and how they can be improved. The method used involves a narrative literature review and an empirical pre-study.

The results suggest that online guest lectures allow students to enhance their knowledge on the course contents and allow them to make more informed career choices. They also suggest that course directors use guest lectures as a means for inspiring and supporting the learning of the students. However, the results also suggest that students can adopt a more passive role in online guest lectures compared to face-to-face guest lectures. Learning in online guest lectures could be enhanced when connected to learning activities that support them, e.g., follow-up seminars, assignments, and reflection documents.

In terms of implications, this study presents course directors and students' perceptions of online guest lectures, as well as presents improvement suggestions for course directors and guest lecturers when planning and performing guest lectures in university courses to enhance learning among students.

KEYWORDS

Guest lecture, STEM, online education, e-guests, postgraduate, CDIO standard 7, CDIO standard 11

INTRODUCTION

Integrated learning experiences is focused in CDIO standard 7 focusing on the acquisition of disciplinary knowledge with personal and interpersonal skills, and product, process, system, and service building skills. Using pedagogical approaches that integrated professional

engineering issues contexts with other disciplines, help students to understand and prepare for the future career in the engineering role (CDIO, 2021). Guest lecturing in collaboration with industrial partners, alumni, and other key stakeholders are often helpful in achieving this integrated learning experiences. Different studies confirm benefits of using guest lecturing to connect students to the real-world working environment in industry, promoting integrated learning experiences (e.g. Jackson, 2017; van Hoek et al, 2015).

Nevertheless, the Covid-19 pandemic had a huge impact on university education. Teachers had to change their offices for their homes and students had to be educated through a screen. This represented challenges for the pedagogical methods used in university as almost all learning activities had to be adapted to fit a new way of teaching, with an online approach. Guest lecturing was not an exception.

Online guest lectures have become a common learning activity during the Covid-19 pandemic, which has forced the use of online applications for previous on-campus learning activities. Guest lectures have been performed online before the pandemic (Alebaikan, 2016; Costello, 2012) and it is anticipated to continue to be a requiring activity in higher education.

Previous research has recognized different strengths and weaknesses from using online guest lectures instead of face-to-face guest lectures (e.g. Hemphill and Hemphill, 2007; Li and Guo, 2015; Alebaikan, 2016; Fulton, 2020). On the one hand, online guest lectures provide increased flexibility and accessibility as students and guest lecturers can participate from different locations. On the other hand, such lectures tend to reduce social interaction between students and the guest lecturers in comparison to face-to-face settings, which can negatively impact learning among students (Fulton, 2020). Literature have presented different important aspects of online guest lectures (e.g. strengths, weaknesses, strategy and planning of such an activity). However, there is still a lack of understanding how this teaching activity is perceived by both students and course directors in different programs and contexts, as well as how this activity can be improved to enhance learning among students at a university level. Scholars have recommended further investigation on both the impact on learning and the perception of using online guest lectures in higher education (Alebaikan, 2016). This to further understand and improve online guest lectures to close the gap between the online classroom and reality. The purpose of this study is to explore how online guest lectures are perceived among students and course directors, and how they can be improved.

The outline of this paper includes a frame of reference, followed by the method used. Thereafter, the findings from the empirical data are presented, followed by a discussion. The paper ends with a presentation of the conclusions and implications.

FRAME OF REFERENCE

Previous literature on face-to-face and online guest lecturing centres in the suggestion that guest lecturing narrows the gap between the theory that students learn in a course and the reality when it is applied in a company (Costello, 2012; Deweck et al, 2005; Eveleth & Baker-Eveleth, 2009; Fulton, 2020; Hemphill & Hemphill, 2007; Rich et al., 2018; Rowland & Algie, 2007). Rowland and Algie (2007) mentioned that guest lecturing has the potential for improving the student's first-hand knowledge from real-life business practices. Ji et al. (2021) stated that guest lecturing can be seen as a way of experiential learning that provides a more accurate picture of the contents of the course. Experiential learning is explained by Biggs and Tang (2011) as a way of learning that involves the transfer of knowledge from real experiences to the students and constitutes a way to deepen and strengthen learning in students. Moreover,

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guest lecturing can be used to highlight the current state of the art implementations in industry and keep students up-to-date and ready for the business world (Quist et al, 2017). Then, Hemphill and Hemphill (2007) added to the deepening of knowledge by stating that online guest lectures can enhance the students' critical thinking.

Several researchers highlight benefits from using online guest lecturing. According to Rich et al. (2018), guest lectures have the potential to awaken interest in a subject and to evidence the relevance of the methods studied in previous lectures and literature. Similarly, Eveleth and Baker-Eveleth (2009) stated that the credibility that the guest lecturer possesses by presenting real-life events may be able to reinforce learning of the contents of the course. Ji et al. (2021) suggested that it is important for the students to be able to relate to the guest lecturer. Therefore, it is often preferred to have alumni and recent graduates as guest lecturers. In addition, Ji et al. (2021) found that students see guest lectures as a possibility to obtain professional connections. In particular, guest speakers can provide the students with the possibility to have an introduction to career choices and to understand in a better way their field of studies (Belsera et al., 2018; Costello, 2012).

Challenges with online guest lecturing were also found in previous literature. Fulton (2020) suggested that the guest lectures should be used in combination with other teaching activities besides traditional lecturing for increasing the learning opportunities. The author explained that online guest lectures can have a difficulty for enabling interaction among participants. Some researchers suggested that the use of more interactive teaching forms than traditional lecturing could have a better result in the learning (Craig et al., 2021; Merle & Craig, 2017; Riebe et al., 2013). Interactive teaching forms include teaching activities with questions and answers or discussions where the students are included to increase their engagement. Hemphill and Hemphill (2007) also highlighted the importance of student engagement and consider that online guest lecturing can enhance engagement among students. In contrast, Merle and Craig (2017) stated that traditional lectures are a more recommended approach than the online alternatives for enabling the interaction and engagement.

Furthermore, Riebe et al. (2013) mentioned a challenge related to the participation of the students. These authors stated that for the learning to be deepened by the guest lecture, the students need to have an active participation. This active participation can be included by linking the guest lecture to an additional evaluation or learning activity. Some examples to these activities are case solving, discussions, and simulations.

There are certain considerations referring to the way a guest lecture is performed. Riebe et al. (2013) highlighted the importance of having an appropriate guest lecture. The authors suggested that a guest lecture should be well-organised, focused, interactive, and have a clear and well-stated purpose. A guest lecture should also enable students to have critical thinking, analytical and allow them to apply the learnings from the course to the contents of the guest lecture.

Eveleth and Baker-Eveleth (2009) refer to the importance of choosing an appropriate speaker for the lecture. The guest lecturer should have expertise, be credible and have good communication skills for having a greater impact on the students' learning (Eveleth & Baker-Eveleth, 2009; Farruggio, 2011). Fulton (2020) stated that the guest lecturer should have appropriate expectation on the lecture and communicate those expectations clearly to the students. Additionally, and particularly for online guest lecturing, is it advisable that the guest lecturer explains the technologies associated to the development of the guest lecture. Items such as the opportunities to ask questions in a chat and calling for the attention of the speaker

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enables a better communication with the audience. It is also recommended that the students are familiar with those technologies prior to the guest lecture.

METHOD

This paper constitutes a pre-study, in a work in progress status. It is a qualitative investigation on the perceptions of online guest lecturing from the students and the course directors' perspectives. As a first step, a narrative literature review was performed, followed by an empirical pre-study. The pre-study involved students' and course directors' perceptions from three different courses given at the division of Logistics and Quality Management at Linköping University for the first semester 2021. The data collection in the pre-study involved interviews with both students and course directors from these courses. The literature review and the empirical pre-study are further explained in the upcoming section.

The literature review

A narrative literature review with a snowball approach was used for this paper. Initially, relevant papers regarding guest lecturing were searched and read by the authors. For this initial review, search terms such as "STEM", "Guest lect*", "distance", "online", "digital" and "university" were used, where "*" was a wild-card.

The results from this initial review constituted the base articles for the snowball approach. In the review with the snowball approach, new sources were discovered from the base articles leading to other relevant literature for the purpose of this paper. The literature review resulted in the frame of reference of the paper and worked as a base for designing the questionaries used in the upcoming data collection.

The empirical pre-study

The empirical pre-study involved three courses at a master level. The settings of the courses are summarized in Table I.

Table 1. Courses information

Course	Content	Pre-requisite	Teaching language
A	Introductory course on quality management	None	English
B	Introductory course on Lean production	Basic knowledge in quality management	English
C	Introductory course on buying strategies	Basic knowledge in logistics	Swedish

All guest lectures in all three courses were conducted online. The guest lecture for Course A involved a single guest lecturer from a consultancy company who presented their ways of working with quality management for enhancing sustainability, in different companies. The guest lecture in Course B constituted a two-and-a-half-hour conference where five representatives from different organizations presented Lean initiatives in their companies. The

companies included in the conference were a vehicles and tools production company, a pharmaceutical company, a regional governmental entity, an insurance company, and a company dedicated to aerostructures. As an introduction to the conference, the representative from one of the companies did a 45-minute presentation about how his organisation has been working with Lean. Then, there was a discussion panel in which all five representatives joined in answering questions from students and discussing. Finally, course C involved two guest lecturing sessions, which involved a presentation by the lecturer and ended with a question session where the students could ask questions. The first lecture involved two guest lecturers from a consulting company, which presented how they adapted a traditional purchasing process (known from the course) in their own work. The second lecture involved one guest lecturer, who held a presentation about strategic purchasing and her experiences from working at different purchasing companies as well as in different business sectors.

Data collection

The data collection included interviews with students and course directors, conducted in two sets. Based on literature from the initial review, two questionnaires about guest lectures were designed and reviewed by the researchers. The first set involved the interviews with the course directors, which involved questions related to guest lectures from a course director´s perspective. Due to time constraints, the questionnaires were sent by e-mail and answered by the course directors. Follow-up questions were done when needed.

The second set involved the student Interviews, which involved questions related to guest lectures from a student´s perspective. Emails were sent to some of the students of the courses explaining the purpose of the pre-study and the anonymity of participating in it. The students that replied were interviewed by one of the researchers. All interviews were recorded. The interviews were conducted in a semi-structured way, following a guide questionnaire. The language of the interview was determined by the course language. The selection of the students for the interviews of courses A and B was restricted to students that had attended both courses.

Analysis

For this pre-study, an analysis based on pattern matching was performed. The researchers scanned for similarities between what the students and the course directors expressed during the interviews and what was found in the literature review. Moreover, a cross-case pattern matching was performed by comparing the experiences of the students and course directors from Course A, B and C.

FINDINGS

The key findings from the analysis of the empirical data are presented in the upcoming section. To start, according to the course directors, the aim of the guest lectures was typically to create a better connection to reality and to deepen the knowledge related to the course. Several benefits from guest lecturing were mentioned by the interviewees. The courses directors mentioned that the use of online guest lectures facilitates the allocation of resources. It is easier to allocate potential guest lecturers without constraints such as distance, location, and time. It is a way of having simpler and more economic guest lectures in a course.

The course directors also reflected on having higher rates of attendance compared to onsite guest lectures in previous years of the same courses. However, they identify certain issues

when dealing with online guest lectures, in particular interaction with the students. The directors experienced a lower number of questions and overall participation when the lectures were online despite the higher attendance. Similarly, the students mentioned that onsite guest lecturing could facilitate for the students to ask questions and be more inviting for a discussion.

Moreover, the course directors mention that it is difficult to engage the students in the lecture, this was confirmed by the students. The students mentioned problems to stay focus due to other distractions and possibilities like surfing in social media or developing other assignments while listening to the guest lecture. The students feel more confident to ask questions when it is possible to see the reactions of their peers. In online options of teaching, it is common that the students have the camera off during the lectures if they don't get another indication from the lecturer or course coordinator. Overall, the findings suggested that achieving the students' engagement requires more effort from the lecturer when using an online modality.

From a students' perspective, they feel compelled to listen during an onsite guest lecture, whereas in an online lecture the student felt less compelled and was more inclined to do something else or leave. The reason for the higher sense of responsibility was attained to the sense that the guest lecturer seems to make a bigger effort by traveling to the university to give the lecture. One of the guest lectures in course C involved a presentation followed by a discussion, the attendance decreased before the discussion began. The following quote describes what happened:

"[a challenge with online guest lectures is...] group discussions, getting feedback or reconnection. It is hard to force students to discuss and many disappeared when it was time for the discussion."

-Course director for Course C

Moreover, the respondents mentioned that the online guest lectures were sometimes more difficult to listen to. For instance, it was difficult for the students to follow the discussion during the conference in course B, when several lecturers were speaking at the same time in a discussion panel. The respondents also mentioned technical issues related to the online guest lectures, such as internet connection and audio issues. These issues made it hard to stay focused, and to interact with the guest lecturer. Language skills was also mentioned as a relevant factor that could be a hinder for students attending online lectures. The risk for this hinder is reduced for onsite lectures by adding the body language of the people involved.

The findings also include key components of a good guest lecture. Most of the respondents mentioned that a guest lecture needs to be inspiring, relatable, and serve as a complement to the other learning activities in a course. The interviewees mentioned the importance of "real-life" examples, where theory presented in the courses were applied on real problems.

"[in guest lectures...] students get pictures and experiences from practitioners. Theories taught in the course got reflected, emphasize or brought to life by the guest lecturers"

-Course director for Course B

Students express that there is a lack of "real-life" examples that they can relate to, and that larger parts of the lectures often constitute the guest lecturer presenting the company´s achievements without relating it to the course. Instead, the students request an honest approach from the guest lecturers, where they present important skills sets as well as common pitfalls that they have encountered in their work. This enables the students to better understand the practical use of the content taught in the course. The students considered that the online guest lectures allowed a limited interaction, which limited the opportunities for networking and for identifying employment opportunities. Nonetheless, some of the students considered that the nlyne guest lectures provided them with a better insight of different working opportunities and industry branches. This insight can support them on making future career decisions, for

example the type of desired employers or the choice of branch. This was an expectation from one of the course directors, who stated that guest lectures could give the students a better picture about the future career and a vision to the future of the field of the course.

Students considered the guest lectures as an "eye opener" and mentioned that it was during this kind of lectures that they realized that the theory studied in the course usually needs modifications, simplifications, and adaptations to the different contexts. Also, that tools and methodologies might seem simple, standardised, and applied stepwise whereas; their application, can be more abstract and context dependent. Therefore, students see in the connection between the guest lecture and the course contents a requirement.

Students mentioned that a relevant aspect of guest lectures is the timeframe in which they are placed in the schedule. Some students reflected on the timing of the guest lectures and wish they came earlier in the course. Perhaps as a lecture with an introduction purpose to the subjects of the course. In addition, the students mentioned that it was more likely that they would prioritize other things when the guest lectures were in the end of the course and not connected to any evaluation activity.

Similarly, in terms of preparations and examinations connected to the guest lectures, only two of the courses had other learning activities connected to the guest lectures. Before the conference in course B, the students had to submit three questions per student group. The students express that it was interesting to design questions that they could ask before the conference. However, it was difficult to design relevant questions since they did not have any knowledge about the specific contents of the conference beforehand. Moreover, the students expressed their disappointment because not all questions were asked to the lecturers. Also, it was the course coordinator who asked all the questions which limited the opportunity for the questions to lead to a discussion or for follow-up questions to emerge. In Course C, it was recommended to read course literature before the guest lecture, however, the literature was not directly connected to the specific lecture. The student from this course did the recommended reading but expressed a wish to have a more active role, for example by being able to ask questions to the lecturers.

In terms of examination, the students in Course B had to submit a reflective document after the guest lecture, and in Course C the content of one of the guest lectures were used in the final exam. The course coordinator for course A explained that the reason for not having an examination connected to the guest lecture is that, while having a grading assignment might increase attendance to the lecture it might also result in the student focusing more on studying the lecture instead of thinking freely and have a more reflective posture to the contents of the lecture. Moreover, the course coordinator considers that the guest lecture in that specific course is intended as a moment for developing and stimulating new ideas for students. This distraction situation was mentioned by a student from Course B. The reflection document required after the guest lecture made him prioritise identifying connections between the lecture and the contents of the course for writing the assignment. The student reflects on an issue in which it was possible that he missed other aspects for writing the assignment while the lecture was held.

According to the expectations for the guest lecturing, the course directors wanted the students to get a clearer and deeper understanding of the contents of the course. They also expected the students to get a better understanding of the practical applications of those concepts. Most of the students had none to low expectations on the guest lectures, as their previous

experiences from guest lectures had lacked relevance and were not prioritized as they typically were not a part of the examination.

Furthermore, the analysis presented the importance of skilled guest lecturers to motivate and stimulate learning among students. The empirical data presented several key features of a guest lecturer. To start with, most respondents argued that a guest lecturer should be knowledgeable, inspiring, energetic, and have excellent communication skills to captivate the audience. In addition, alumnus was often preferable as guest lecturers among the students as they tend to be more relatable to the students and have previous experience of the structure and the content of specific course that enable the guest lecturer to create more informative and relatable content.

Finally, the respondents preferred onsite guest lectures over online lectures. The main reason for this was that the respondents found it easier to listen, to focus and to interact with the lecturer onsite. Also, the students consider that the results of the guest lecture are not that sensitive to the speaker skills when performed onsite.

DISCUSSION

From the student and course coordinator perspectives, online guest lectures' main contribution is to increase the proximity between "real-life" and the course contents. The empirical data confirms what is stated in literature in terms of the purposes for using guest lecturing. Then, it also confirms the suggestion that having online modalities to guest lecturing has certain benefits from a course coordination perspective. For example, easier to find guest lecturers, less constrains in terms of time, costs, and distance, and increasing the possibility to have more guest lecturers due to the resource effectiveness aspects related to online teaching.

Online guest lecturing also allows the students to have more freedom, if the student is really interested in the subject, they can listen to the entire lecture but if the subject is not interesting then they have the possibility to leave the lecture or to focus on other tasks. Undoubtably, this can also be seen as a drawback since the students can have difficulties to stay focused on the lecture. They have more accessibility to distractions without the lecturer noticing their lack of attention. This challenge for the lecturer to "read" the audience becomes then a hinder for taking actions to catch the attention of the students and make pauses when the students need it. This also becomes a challenge for the students to read their peers reactions during the lecture, especially when no video of the students is included. This represents a hinder for the students to dare ask questions and starts discussions with the guest lecturer.

In literature, one of the benefits mentioned for guest lecturing was the professional opportunities to which having guest lecturers can lead to. The empirical data confirms that online guest lectures can give the students insight on their field of studies, as well as inspire them and aiding them in the selection of their future career paths. In contrast, the students do not see in online guest lecturing an opportunity that could lead to employment opportunities or professional networking. This is attained to the limited-to-no interaction between the guest lecturer and the students.

The student-guest lecturer interaction is mentioned as a relevant requirement from both a student and a course coordinator perspective. In literature, it is also mentioned as one of the biggest challenges, especially for online guest lectures. Both students and course directors mentioned the benefits from supporting the guest lectures with another type of learning activity.

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However, as expressed by one of the course directors, examination activities might lead to a distraction for students. This was the case for one of the students in course B. We suggest that the connection to other learning activities could be done to non-evaluation related activities for incentivising the students' freedom of thought and critical and analytical thinking.

Another similarity found between literature and the empirical data was the important aspects related to the way the guest lecture is performed and the characteristics of the guest lecturer. Between these two sources, there is a consensus in the idea that an online guest lecture needs to be relevant for the contents of the course. Moreover, it needs to have a clear purpose and a technical structure for transferring knowledge to the students. The technologies involved for holding the guest lecture should be known by all parts involved and easy to use. Then, it is recommended for the guest lecturer to be aware of the contents of the course and design the guest lecture in a way in which it has a clear connection to the course. Additionally, it is important for the guest lecturers to be familiar with online lecturing, have good communication skills and be aware of the importance to interact with the students.

Overall, from perspectives, the onsite guest lectures are preferable and suggested to have a more effective knowledge transfer and more interaction between students and external partners than its online peer. However, there is a potential to use guest lectures with an online modality connected to other learning activities. This could facilitate the administration of the guest lectures while still providing the students with opportunities to deepen their knowledge.

CONCLUSION

This pre-study suggests that onsite and online guest lectures have the potential to reduce the gap between theory and real-life. They provide students with experiential learning allowing them to broaden and deepen their knowledge on the course contents. They also provide opportunities to make more informed career choices in the future. Nonetheless, from a students and course directors' perspective, the onsite alternative is preferable. This is attainable to the interaction possibilities from onsite learning.

Online guest lecture can be more resource effective from an administrative point of view, but it might require additional learning activities linked to it for having a considerable effect in the students' learning.

However, this pre-study has some limitations. First, the empirical data was gathered from three courses within an industrial engineering and management program in one university. Second, the perspective of guest lecturers themselves was not included in this pre-study, but only the perspectives of course directors and student. Indeed, more research is needed for strengthening online guest lecturing. We suggest the need of additional teaching activities to support online guest lecture. Therefore, the adequate type of teaching activities that best support online guest lecturing should be investigated. This should be investigated from an administrative, technical, and educational point of view. Moreover, it is also interesting to look into pedagogical quality of guest lectures related to guest lecturer's competence and as sociated learning activities could be assured in practice.

Regarding the implications of this pre-study, we suggest that it can be a basis for developing a bigger study that involves more students and course directors. We anticipate that a study could have great impact on the available information about online guest lecturing. Moreover, it would be of great support for course directors and guest lecturers in the tasks of planning,

designing, performing, and evaluating online guest lectures at a university level. In addition, this study involves an elaboration on the CDIO Standards 7 and 11. In particular, our study concerns integrated learning experiences, as well as learning assessment related to online guest lectures.

FINANCIAL SUPPORT ACKNOWLEDGEMENTS

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BIOGRAPHICAL INFORMATION

Priscilla Navarro: is a PhD candidate. Her research focus is on process management and dynamic capabilities applications for enhancing environmental sustainability.

Linnea Haag PhD: is a university lecturer. Her research focuses on retail logistics and dynamic capabilities in a retail setting.

Promporn Wangwacharakul PhD: is a university lecturer. Her research focus is on cross-cultural quality management and customer value through innovation in remanufacturing.

Jason Martin PhD: is a Senior Lecturer and management researcher. In his research and teaching he adapts a competence perspective on how organisations accommodates both adaptation and production logics together with innovation and development logics in management practices.

All authors are part of the Logistics and Quality Management division from the Department of Engineering and Management at Linköping University and teach at bachelor's and master's level education on various courses LiU, in which the CDIO initiatives are used.

Corresponding author

Priscilla Navarro
Linköping University
Dept. of engineering and management
s-581 83 Linköping,Sweden
priscilla.navarro@liu.se

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