

Interdisciplinary Learning: Process, evaluation, and reflection - A preliminary study of the *Communication & IT* study programmes

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Introduction

In recent decades, the theme of “interdisciplinarity” has gained unprecedentedly popularity in both academia and industry, including education policy, practice, teaching and research circles (e.g., Augsburg (2006), Barry et al. (2008), Brewer (1999), Stehr & Weingart (2000)). While increasingly becoming a focus of attention for institutions advancing learning and teaching, such a term is facing multifaceted criticism, challenges, and obstacles in practice (for a review, see Chettiparamb (2007)).

In the process of teaching and learning practices in higher education, in particular, the transferring of the idea or concept of interdisciplinarity into pedagogy requires more than an understanding of the concept (e.g., Chandramohan & Fallows (2008), Kockelmans (2003)). For instance, beyond the acquisition of “the integration of multidisciplinary knowledge across a central program theme or focus,” Ivanitskaya et al. (2002) underline that the process of interdisciplinary learning begins as students deliberately reflect upon their own ways of thinking and “... apply interpretive tools across disciplines and thereby face their own internal set of implicit theories, assumptions, beliefs, and prejudices.” (p. 103). In their critical review of interdisciplinary higher education, Spelt et al. (2009) propose a capacity of “interdisciplinary thinking” “as a complex cognitive skill” of interdisciplinary learning, which includes a range of subskills besides knowledge of disciplinary paradigms and knowledge of interdisciplinarity, such as higher-order cognitive skills and communication skills. Nevertheless, the literature specific to the understanding and practice of interdisciplinary learning is still best

described as inchoate. In particular, as Spelt et al. (2009) address, “...interdisciplinary higher education is still being defined *not in terms of what students gain in ability but in terms of its own pedagogical characteristics*” (p. 375, emphasis added). In other words, the way in which interdisciplinary learning is conceptualized and practicing remains largely concentrated on, for instance, curriculum design and teaching quality, instead of the (expected) process and outcome of interdisciplinary learning from students. The latter, according to Biggs & Tang (2011b), is instead the most relevant index that evaluates the outputs of the learning process. Against this backdrop, Spelt et al. argue for the need of more empirical studies to explore “...whether the proposed performance view of curriculum design in interdisciplinary higher education does indeed facilitate the achievement of the learning outcome...” (Spelt et al. 2009, p. 376) in practice.

This study follows Spelt et al. (2009) argument and takes the interdisciplinary study programmes Communication & IT (Comm&IT for short hereafter) at University of Copenhagen as an example to investigate the process and outcome of students’ interdisciplinary learning practice. Specifically, it focuses on the process and evaluation of interdisciplinary education from student’s perspective and explanations for the ways students tend to integrate knowledge in interdisciplinary programs. In the following pages, I first present the general information about the interdisciplinary program. Second, I introduce the method, followed by the discussion. I conclude with my preliminary reflection upon the practice of interdisciplinary teaching and learning.

The Comm&IT Programme

The BA and MA programmes in Comm&IT¹ starting in 2009 and 2012 respectively, are offered by the Department of Media, Cognition and Communication (MEF) in collaboration with the Department of Computer Science (DIKU). As interdisciplinary programmes, they aim at systematically integrating *communication studies* and *computing sciences* for the design and use of new media in the context of real world practices of individuals, communities, and organizations. Students will get systematic knowledge

¹ For the information about the BA program (only in Danish), see <http://studier.ku.dk/bachelor/kommunikation-og-it/>; about the MA program (only in Danish), see <http://studier.ku.dk/kandidat/kommunikation-og-it/>.

about computers, construction, operation, and social applications. Meanwhile, they will learn the skills to analyze the communication processes and problems in work and everyday life (for detailed information about the competencies of bachelor students, see *Studieordning for det centrale fag på bachelorniveau i Kommunikation og it: 2014-ordningen*, 2014: 4-5; about the competencies of master students, see *Studieordning for kandidatuddannelsen i Kommunikation og it: 2012-ordningen*, 2014: 5-6). There is *no* essential requirement that students need to have computer background to enroll in the programme. Generally, in each semester the BA programme offers both courses in communication studies and computer science, while the MA one has joint-courses offered by lecturers from both sides. For instance, the first semester in the BA programme consists of the courses “Basic Communication Theory (Grundlæggende kommunikationsteori)” from MEF and “Basic Computer Science (Grundlæggende datalogi)” by the Department of Computer Science.

The Comm&IT Programme is one of few study programmes not only in the University of Copenhagen but also in the world that integrates communication studies, a discipline of humanities and social sciences, with computer science, a discipline of natural sciences. In other words, the program runs across what people normally perceive as “soft science” and “hard science,” which makes it largely distinguished from other interdisciplinary programmes². To be clear, both the disciplinary differences between nature science and social sciences and the humanities and the interdisciplinary feature are so explicit that makes the Comm&IT programme deserving of study. Moreover, the program has its first round of graduate students (with 100% employment rate), which also provides an opportunity to have an overview of different cohorts of students.

Method

This study employs focus group and in-depth interview to explore the process, evaluation, and reflection of interdisciplinary learning from students’ perspective. Four student volunteers from BA and MA programmes have been recruited based on the principle of voluntary. Two (A, B) are from the second year and one (C) from the third year in the BA programme. One (D)

² Some study programmes in Area Studies, for instance, are also called “interdisciplinary programmes,” which largely consists of disciplines within social sciences and the humanities only.

from the second year in the MA programme, who also gets her undergraduate degree from the Comm&IT programme. Three of them are female and one male.

I carried out focus group interviews on the following dates and times:

- With students from the BA program: March 20, 12:00-13:30, KUA Room 14.1.42³.
- With student from the MA program: December 12, 2014, 9:30-11:00, KUA Room 14.4.05.

Both interviews followed the same schedule. I started by introducing myself and the general information of the project. I also guaranteed that the interviews are anonymous and the data should be analyzed carefully and only used for scientific purposes. The student volunteers will also be able to get access to the final report after I finish it. I also provide souvenirs (each around 30 DKK) to interviewees to acknowledge their participations.

Then, I distributed the questionnaires (see Appendix B) that includes five questions and provided the student volunteers 20 minutes to write down their answers. After they finished their writings, I took around 10 minutes to read all their answers and then carried out focus group discussion or in-depth interviews (for the interview guide, see Appendix A) given what they have written down in the questionnaire. I took notes during the whole process. The discussion/in-depth interview lasted for around one hour and was carried out in English. I also asked for the permission to record all the discussions/in-depth interview.

After the focus group and in-depth interviews, I listened to recorded interviews and made the full transcript of the interview. Then I categorized answers, made notes in an organized fashion, and synthesized the findings. Both the questionnaires and transcripts are available upon request.

Findings and Discussions

Given the answer from interviews, there are a few issues as followed that deserve to reflect upon regarding the process, evaluation, and reflection of interdisciplinary learning in the case of the Comm&IT programme.

First, the term “interdisciplinarity” refers to not only a combination of knowledge from different disciplines, but also multiple, different methods

³ Together with Manpreet Kaur Janeja from the Department of Cross-Cultural and Regional Studies.

and approaches as means of solving problems and answering questions *in reality*. All interviewees pointed out that interdisciplinarity teaches them to approach an issue or a problem from multiple, different perspectives on the basis of different disciplines. As one addressed, "...it [interdisciplinarity] points out the fact that there is not *one* right way of doing things. You always have to evaluate what both/all areas can bring to your field of research." (B, emphasis added) The interviewees also appreciated the benefit to be interdisciplinary. For instance, one mentioned that "...I do not think my [graduate] project would have the same value and perspectives if it was not interdisciplinary." (D)

In particular, one answer about the understanding of "interdisciplinarity" goes as "...working with several areas at the same time; combining different methods from different areas and making them work together; working with several scientific/philosophical culture." (B) Here, such a comprehensive definition demonstrates an advanced epistemological belief that goes beyond "...application of multidisciplinary knowledge to the same relevant context." (Ivanitskaya et al., 2002, p. 109; Jensen, 1990, p. 100). Because, as one interviewee highlighted, the problem in reality is complicated and does not have any discipline-oriented (D). Accordingly, the approach or method should not be limited within one specific discipline or domain. With repeated exposure to interdisciplinary teaching and learning environment, students develop an understanding of the relations among perspectives derived from different disciplines. This understanding underlines a comprehensive means of looking at things or dealing with problems in reality, which always encourages or allows for alternative or multiple methods or approaches (Klein 1990, p. 196).

Second, practice, in particular problem-solving practice, plays a key role in facilitating the achievement of the learning outcome of interdisciplinary. Interviewees underlined quite frequently the benefits from practices – design project in the first semester and internship, for instance – for them to employ what they have learnt to solve "real world problems." For instance, one valued the design project as her "favorite part," "...because it is our first chance to do something which is a mixture of the two [subjects]." (A) Another added that "...the purpose of the [design] course is to go out and do research and implement the research...to rephrase the answer into concrete designs..." (C) By doing so, students combined and deepened their understanding of not only interdisciplinary knowledge but also – and again – interdisciplinary methodologies and approaches. This point resonates with what Biggs & Tang (2011*b*) underline in their work

that quality teaching emphasizes student-centered approach and that it is what the student does that matters in the process of quality learning.

Third, there are a few issues that need to be clarified and paid attention to in the specific case of the Comm&IT study programme:

(A) A misunderstandings of quantitative and qualitative methods in terms of different disciplines. Interviewees tended to connect computer science with quantitative methods exclusively and communication studies with qualitative ones. As one claimed, “[computer science]...only talk about number...[communication studies]...only talk about people.” (A) Similar statement can also be found from B. This is, however, a wrong understanding. Both quantitative and qualitative research approaches have been employed within the broad field of communication research. Similarly, in the field of computer science, taking a cultural, qualitative approach to understand the design of, for instance, interface, is also becoming an emerging phenomenon (Hazzan et al. 2006).

(B) An incomprehensive understanding of pragmatism. Interviewees tended to treat computer science as pragmatic, which aims to solve practice problems in reality (C). Nevertheless, as an interviewee (B) argued, “social sciences can also be pragmatic...” In other words, pragmatism should not be a criterion to distinguish, in this case, humanities and social science from computer science.

(C) A lack of critique/critical thinking towards the idea/term of interdisciplinarity. Especially, this point comes from the interviews in the Universitetspædagogikum pre-project that includes students from another interdisciplinary programme (i.e., Modern India and Southeast Asia, MISA for short). One of the key differences between student volunteers from the Comm&IT programme and the ones from MISA is that, the former did not demonstrate a sort of critical viewpoint towards either the idea of interdisciplinarity or the programme itself, as all of those in Comm&IT – and most of the students in the programme – do not have study experience in other programmes. On the contrary, three out of four student volunteers from MISA had already finished or engaged in one bachelor degree and two of them had even already enrolled in interdisciplinary programmes before. Such experiences dramatically shaped their perception, understandings, and caution towards the idea of interdisciplinarity. Given the rapid development and emerging discussions of interdisciplinarity, it is necessary to include arguments and criticism towards interdisciplinarity to help students establish a comprehensive understanding of the idea of interdisciplinarity. Such discussion will also enable them to think critically about the subject they learn.

Reflection: The *still* relevant role of teachers/teaching in the process of interdisciplinary learning

A key, interesting observation and reflection regarding interdisciplinary learning that may need to take into consideration in future is: *A joint teaching by teachers from different disciplines plays a key role in engaging students in the process of interdisciplinary learning and articulating matters of interdisciplinarity.*

While interviewees acknowledged that they do benefit from interdisciplinary learning and practice, they addressed a common but key issue in this process (e.g., see Spelt et al. (2009)): the difficulty to integrate concepts and knowledge from different disciplines resulting in a synthesized or coordinated coherent whole *by students themselves*. More specifically, interviewees considered the courses at the bachelor program “...still very separate,” (A) or “very divided [in terms of the computer part and the communication part]” (B). For one of them, the course on the bachelor level is rather “a combination [of] courses [of communication and computer science],” (D) instead of an integration of disciplinary knowledge from two disciplines. Given her experience as a teaching assistant in one of the master course, D also added that “it is pretty difficult for the students to see the combination [of different disciplines]...from the theoretical perspective.” This, as students perceived, is largely because the individual courses in the bachelor programme are still characterized with a strong, discipline-oriented nature (e.g., the courses Basic Communication Theory/Basic Computer Science in bachelor courses⁴) and, more important, teaching/teachers in different, individual courses rarely make connections among them – in particular with those ones in other discipline. Such a situation leads to the fact that multiple perspectives are presented *without* any support from teachers/teaching for the integration of disciplinary knowledge. In other words, students have encountered difficulties in synthesizing and working in different disciplines or across disciplines by themselves. This consequently poses issues for the development of interdisciplinary learning and thinking, leading to the potential danger that all too often a curriculum is called interdisciplinarity when it is actually *multidisciplinarity* (for the differences between “interdisciplinarity” and “multidisciplinarity,” see, for instance, Borrego & Newswander (2010)).

⁴ D also took one example, i.e. organization communication and computer-supported cooperative work, from the master course to elaborate on this point.

This is to say, that teaching maintains a *key* role in the process of interdisciplinary learning, as students need specific help from teachers/teaching activity in order to engage in this process and to be able to synthesize two or more disciplines. For the courses in an interdisciplinary programme such as Comm&IT, according to one interviewee, the fact that one teacher taking charge with a whole course “...does not make sense.” (D) One possible solution, as currently in the master course⁵, is to have teachers from different disciplines working together as a team in a course (D). As one interviewee said, “...the combination [of different disciplines] in the master level is more clear [than in the bachelor level], because we also have teachers, professors, from DIKU and MEF, in one course. . . so in their work they have to combine it, the way they teach us, to make it clear for us...it was difficult at then [in the bachelor course] to see how they [the courses] clearly match...” (D) Here, teacher/teaching remains an essential but unusual role in the learning process, in particular regarding synthesizing different disciplines, because the teachers themselves are requested to be “models” for the students to understand interdisciplinarity. Such a request thereby to a degree raises the demand for teachers, as they should not only have knowledge in other discipline[s], but also work collaboratively to facilitate the achievement of learning outcomes in interdisciplinary programmes. In fact, there are already several projects running as the interdisciplinary collaboration between MEF and DIKU⁶. To utilize and incorporate current or established research collaborations as part of teaching will be a possible way to advance the process of interdisciplinary learning. In short, realizing desired learning outcomes demands consistent and well-designed teaching and learning environments within a coherent and student-centered curriculum.

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⁵ Another example is a course called “Medieværk (in English: Media as Communicative Network),” which I will teach together with a colleague from DIKU in the 2015 spring semester.

⁶ See <http://ccc.ku.dk/research/>

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A Interdisciplinary Learning: Process, evaluation, and reflection(Interview Guide)

1. Educational Background/Experiences⁷
 - a) Why did you decide to join this programme?
 - b) What coursework have you done/are you doing at the moment?
How you are going about that?
 - c) *What do you understand by interdisciplinarity?
 - d) What have the teachers/programme highlighted as interdisciplinarity? Is it different from your current understandings of interdisciplinarity?
 - e) Is the experience of studying with students from other similar fields (e.g. Film and Media, Cognition and Communication, etc.) different from the experience of studying with students in the same field?
If so, how?
2. Self-Perceptions/Understandings of Interdisciplinarity
 - a) *Why do you think you are engaging with interdisciplinarity?
 - b) How do you think the (interdisciplinary) programme you are currently enrolled on differs from a field specific programme vis-à-vis curriculum, research, and career placement/future prospects?
 - c) Do you think interdisciplinarity is important? Why or why not?
 - d) Where did you come across the idea of interdisciplinarity?
 - e) *Do you think your understandings and perceptions of interdisciplinarity have changed? If so, how and why?
 - f) Why do you think the teachers on the courses/programme are encouraging you to adopt interdisciplinary approaches?
 - g) Do you like what the teachers have explained to you so far?
 - h) *Do you think you benefit from interdisciplinary approaches/methods?
 - i) *Do you think the interdisciplinary programme you are on makes a difference to your study methods?
3. Is there anything else you would like to understand about the interdisciplinarity?

⁷ This interview guide and the follow-up questionnaire are developed on the basis of the ones for the pre-project for Universitetspædagogikum “Interdisciplinary Learning: Processes and Outcomes” by Jun Liu and Manpreet Kaur Janeja. The questions that have been included in the questionnaire are marked with an asterisk.

B Interdisciplinary Learning: Process, evaluation, and reflection (Questionnaire)

1. What do you understand by interdisciplinarity?
2. Why you think you are engaging with interdisciplinarity? Why or why not?
3. Do you think your understandings and perceptions of interdisciplinarity have changed? If so, how and why?
4. Do you think you benefit from interdisciplinary approaches/methods? Why or why not?
5. Do you think the interdisciplinary programme you are on makes a difference to your study methods? Why or why not?

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