Spiraling out in control: A Video Cartesian Dialectic on a Socio-technical Approach to Teaching Privacy, Information- and Cyber Security (PICS)

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1 Introduction

In this video submission, a series of videos are presented in which colleagues at the University of Skövde discuss teaching privacy, information- and cyber security (PICS) at the bachelor and masters level using a Cartesian stylized 4 quadrant coordinate system. This system is made up of a x axis with social and technical poles and y axis with theory and practice poles as shown in figure 1, below. The figure is an attempt to frame a socio-technical dialectic between the teachers in the course. We also hope that the framework can be used as a platform by teachers and students to discuss the topics of privacy, information security and cyber security as an emergent socio-technical property.

Spiral learning, or spiral curriculum, is a concept of teaching that was first described by Jerome Bruner (1960) as a curriculum that is designed so that subjects are revisited at higher and higher level throughout a learning process (Bruner, 1960). As described by Harden (1999), Spiral learning includes the following features:

1. Subjects are revisited
2. Each return to a subject brings new information to the learner
3. New information is related to previous learning
4. The competence of the learner increases until the goals with the curriculum is meet.

As such, spiral learning is about identifying fundamental ideas, or principles of a subject and make the student revisit those ideas again and again to understand them fully at a complex level (Howard, 2007). In these video we attempt to give our students a framework that they can reuse to revisit pedagogical material during the program.

2 Background

PICS is an established platform for collaboration between researcher and educators and practitioners at the University of Skövde. PICS started in 2016 and was an initiative from researchers at the University of Skövde, where the area of privacy, information security and cyber security was included in their respective research in different ways. Given the high demand for increased competences in the area, a first step was to develop a master's program that meets both academic and industrial demands. The PICS Master will start in the fall 2019 and the applicant statistic show 15 first-hand applicants per study position for a total of approximately 300 applicants.

Industrial and academic demands require that the students are exposed to both theory and practice. However give the complex nature of systems security the student is required to be exposed to both social and technical theories and practice.

Applying the ideas of spiral curriculum to the socio-technical approach the PICS Master could be visualized with a Cartesian stylized 4 quadrant coordinate systems made up of an x axis with social and technical poles and y axis with theory and practice poles as shown in figure 1, below.

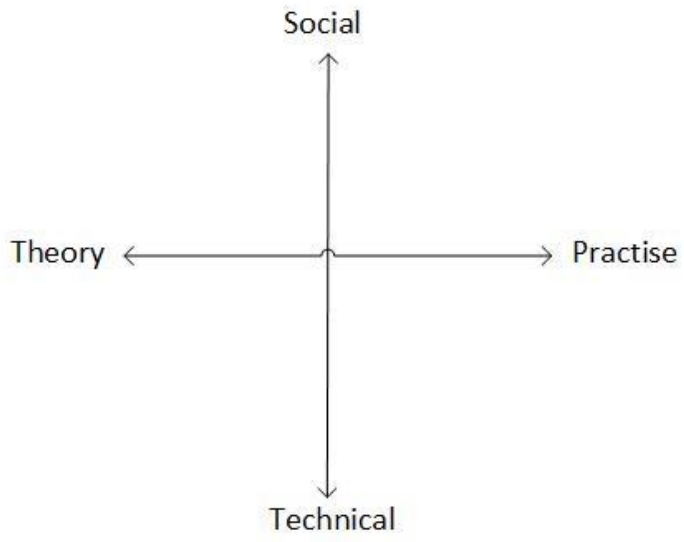

Fig. 1. Cartesian stylized 4 quadrant coordinate systems from a social-technical perspective.

Figure 1 is a model that describes PICS as an emergent social-technical property, and captures the notion that theoretical and practical understanding of the area is equally important. Further, allowing the distance from origo, i.e. middle point, represent the level of complexity, the model can be used as tool for planning a spiral learning curriculum for PICS.

3 The Videos

In their State of Video in Education report 2018[1], Kalura reports that the use of videos for supplementary material in class has increased. The purpose to create this video was to give our students a short high level introduction, i.e. commercial, to the socio-technical philosophy behind the program.

Using the idea of a spiraling curriculum to teach PICS as a socio-technical subject we seek to make the student move around in the quadrant presented in Figure 1. As such, the quadrant serves as a tool that helps us design a curriculum that ensures that the students are learning all aspects of the PICS area at different levels of complexity. In the video one, three educators from the PICS master program at the University of Skövde discuss how their teaching focus cover different areas in the field.

In video one[2], the three educators have being interviewed using the 4 quadrant system to discuss how their individual teaching focus and courses cover different areas and directions.

In video two[3], the same educators are talking about the challenges facing privacy, information security and cyber security education in society in general.

In the third video[4], the educators discuss the learning challenges facing student to understand the socio-technical approach to the problem of privacy, information security and cyber security?

4 Summary and next steps

These videos show the different approaches among the teachers, but also the usefulness of the quadrants to explain just why, and how, the teachers approach are different, and how best to utilize these differences. The videos will, be used to introduce our students at the PICS-program to how we teach, and why. In the future more videos material describing the development during the program will be developed.

References

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