# Essay Proposal

## COMP110 - Computer Architecture Essay

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## Topic

My essay will be on how the allocation of tasks using Agile methodologies (e.g. Scrum) in an amateur team is uneven and/or biased More specifically how in a classroom setting the allocation of tasks becomes very uneven and biased, as there is no financial benefit or maybe there is no interest in the task, which has a negative effect on the team collaboration in Scrum, a team member may choose a particularly easy task and another is responsible for the most difficult, but must be done in the same timeframe, another example is a more experienced participant may have done most of the work in the same time it would take an inexperienced student to complete one of the tasks on scrum. I tend to address this question by looking at case studies based in a classroom setting in which the students are using an agile methodology for the first time, looking in depth at the collaboration between the student groups, comparing how professionals using agile methodologies compare to amateurs. Hopefully finding a better method to teach students how to collaborate in a more professional way.

## Paper 1

**Title:** Teaching Agile Collaboration Skills in the Classroom

**Citation:**

**Abstract:** "Agile methodologies like Scrum or Extreme Programming have come a long way over the last fifteen years. Recent quantitative studies show that many companies have successfully adopted agile methodologies. It was found that in agile software development, experience leads to collaboration. It could also be shown that successful professional agile teams tend to use more collaboration practices. In 2013, the new Computer Science studies at the University of Applied Sciences were started. For this, a new curriculum was developed. This paper presents and discusses the lectures, labs and educational software projects in the programming and software engineering modules. It is discussed how agile

collaboration and collaboration practices can be taught in the classroom. For this, the setup and observations of an agile student project are presented and different online collaboration tools are discussed. It is argued that software engineering education benefits significantly from embracing the modern collaboration tools the Internet has made available."

**Web link:** `http://ieeexplore.ieee.org/document/7474474/`

**Full text link:** `http://ieeexplore.ieee.org.ezproxy.falmouth.ac.uk/xpls/icp.jsp?arnumber=7474474#ref_10`

**Comments:** I found this after typing into google 'Teaching Agile methodoligies in a classroom'. The authors of this article have been teaching software engineering and agile methods for more than a decade, while writing about there observations of the students

# Paper 2

**Title:** An Experiance Report at Teaching a Group Based Agile Software Development Project Course

**Citation:**

**Abstract:** Teaching group based Agile software development project courses is difficult. There are many aspects that need to be considered for a project to be successful such as a well defined scope, students working effectively together, and engaging with the customer. In this paper we present an experience report at teaching an Agile software development project course that involved teams developing web applications. The resources developed for the course and discussion about our experience will help inform others who also wish to teach group based software development courses.

**Web link:** http://anslow.cpsc.ucalgary.ca/papers/sigcse2015-anslow.pdf

**Full text link:** http://anslow.cpsc.ucalgary.ca/papers/sigcse2015-anslow.pdf

**Comments:** I found this article referenced in Paper 1, written by lectureres at Calgary University in Alberta, Canada about their experiences teaching students about Agile and how to use it.

# Paper 3

**Title:** Collaboration and human factors in software development: Teaching agile methodologies based on industrial insight

**Citation:**

**Abstract:** Recent studies show that many companies have successfully adopted agile methodologies. In this paper the authors present results of their quantitative and qualitative studies, showing that only experienced companies apply agile collaboration practices properly. The studies also suggest that successful professional agile teams tend to use more collaboration practices and consciously live the agile values. This leads to the conclusion that applying the collaborative practices and living the agile values is difficult. Thus we educators should pay special attention to teaching these practices and values in courses on agile software development. This paper presents how agile collaboration is being taught in the classroom in a fourth semester software engineering module and explains the underlying assumptions. We use an agile coaching game as introduction to Scrum and discuss the mechanics of agile teams in the classroom. We present the setup of a hands-on agile student project with large student teams and the observations we made. Last but not least, we show and discuss how modern online collaboration tools act as enablers for agile collaboration in the classroom.

**Web link:** http://ieeexplore.ieee.org/document/7474675/

**Full text link:** http://ieeexplore.ieee.org.ezproxy.falmouth.ac.uk/xpls/icp.jsp?arnumber=7474675

**Comments:** I found this paper searching 'teaching scrum collaboration', it compares the collaboration practices adopted by the professional teams using agile, and how this can be adopted into a classroom setting to improve collaboration.

# Paper 4

**Title:** Teaching and learning agile collaboration

**Citation:**

**Abstract:** Agile methods are widely adopted in software development. They are based on agile principles that sharply contrast to traditional command-and-control management methods. Such methods emphasize the importance of highly interactive self-organizing teams and close collaboration of all stakeholders, as well as values like courage, openness and respect. However, recent studies show that graduates and undergraduates of computer science often lack the collaborative and communicative skills necessary for agile methods and, thus, are not yet well enough educated for agile development approaches. Therefore, new approaches or more adequate educational methods for teaching the necessary communication and collaboration skills need to be developed. In a recent interview study, the authors elicited specific collaboration and communication skills needed in agile teams. In this paper, we present results from this study and discuss teaching concepts for collaboration skills from both engineering and psychological points of view. We suggest an approach on how to integrate these concepts into university courses, that focuses on active learning of agile collaboration. We have started implementing the proposed concept in a

software engineering course and report on the experiences we have made and on the challenges that we have encountered.

**Web link:** http://ieeexplore.ieee.org/document/6816791/

**Full text link:** http://ieeexplore.ieee.org.ezproxy.falmouth.ac.uk/document/6816791/

**Comments:** This paper is extrememly useful to back-up my theory, they've done case studies to prove students lack the communicative skills to collaborate on a project properly and proposed a way to overcome this lack of experience, this was used as a reference in Paper 3.

# Paper 5

**Title:** Experience Report of Teaching Agile Collaboration and Values: Agile Software Development in Large Student Teams

**Citation:**

**Abstract:** Communication and collaboration are central skills for agile development. Trust, openness, transparency and equality are core agile values and there is a shortage of software developers with these skills. How can we teach software engineering so that students get these skills together with the needed technical competences? This paper presents and discusses the setup of an innovative agile educational student project. The didactical concept is based on results from several industry studies, which give insight into the required competencies of agile software developers.

**Web link:** http://ieeexplore.ieee.org/document/7474468/

**Full text link:** http://ieeexplore.ieee.org.ezproxy.falmouth.ac.uk/xpls/icp.jsp?arnumber=7474468

**Comments:** This provides information on the skills needed to collborate properly using Agile

# Paper 6

**Title:** Agile Success Factors

**Citation:**

**Abstract:** Various studies show great improvements in software projects when agile software development is applied. However, there are still remaining problems and there are also reports about project failures in the agile community. This raises the question of what factors distinguish successful agile software projects and teams from less successful ones? The authors of the Swiss Agile Study wanted to shed some light on these questions. We conducted a qualitative interview study

with eight successful agile IT companies. We asked them about the essential success factors in their agile projects. The findings are divided into three different categories: Engineering practices, management practices and the values, or culture, they live. On the engineering level it was found that these companies apply many technical practices in a very disciplined way, with a strong emphasis on quality assuring practices like unit testing, continuous integration and automation, and clean coding. On the management level it was pointed out that clear requirements, which are verified and validated in very close collaboration with the customer, are essential. The same was true for very close communication within the team. The third aspect that was found, was that in each successful team there was a kind of Agile Champion who motivated and inspired the team to use agility. On the value level we found that successful agile teams live a culture of openness and transparency. They establish an agile culture at least on the team and organizational level (we found only one company who had established the agile method in the whole company). Third, they live an attitude of craftsmanship, being proud of their work and striving for high quality work. Finally we noticed, that while putting high emphasize on the above practices, mature agile teams start adapting these practices and the agile process to their needs, when they notice that some of the practices do not work or that following the recipe is insufficient. A constant probing, sensing and appropriate responding was observed. This is the typical pattern for moving forward in complex adaptive systems. Applying a sense-making methodology like the Cynefin framework, theoretically explains the observations in the present study. Companies should therefore be aware, that software projects are often located in the complex domain, i.e. can be modeled as complex adaptive systems. These kinds of problems rather require emergent practices instead of good or best practices and an understanding of the implications of complexity theory is of merit.

**Web link:**

**Full text link:** http://blogs.fhnw.ch/swissagilestudy/files/2015/05/AgileSuccessFactors2014.pdf

**Comments:** Cited in the above paper but not available on IEEE, this can be very usefull for when I discuss how agile should be used and how successful it can be when it is implemtented correctly