

2015

Assessing and Promoting Groupware for Effective Team Collaboration – A comprehensive Study

Lei Li

Kennesaw State University, li_lei@kennesaw.edu

Rong Guo

University of West Georgia, rguo@westga.edu

Jack Zheng

Kennesaw State University, gzheng@kennesaw.edu

Follow this and additional works at: <http://aisel.aisnet.org/sais2015>

Recommended Citation

Li, Lei; Guo, Rong; and Zheng, Jack, "Assessing and Promoting Groupware for Effective Team Collaboration – A comprehensive Study" (2015). *SAIS 2015 Proceedings*. 32.

<http://aisel.aisnet.org/sais2015/32>

This material is brought to you by the Southern (SAIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in SAIS 2015 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

ASSESSING AND PROMOTING GROUPWARE FOR EFFECTIVE TEAM COLLABORATION – A COMPREHENSIVE STUDY

Lei Li

Kennesaw State University
li_lei@kennesaw.edu

Rong Guo

University of West Georgia
rguo@westga.edu

Guangzhi Zheng

Kennesaw State University
gzheng@kennesaw.edu

ABSTRACT

Being able to work in a team is an important skill for a college student. Many courses include team projects that require students work in groups. This is especially true for upper-level undergraduate courses and graduate-level courses. Groupware is an important tool that assists team members, especially those in virtual teams, to work effectively together. However, groupware wasn't effectively used in many student projects despite its promising benefits. In this paper, we propose a comprehensive study on using groupware to promote effective student team collaboration. The research plan includes identification of the important features of a groupware, creation of an evaluation framework, assessment of available groupware on the market and a recommendation, and finally an empirical validation of the effectiveness of the recommended groupware. The detailed research design is presented and the implication of the study is discussed.

KEYWORDS

Team Project, Collaboration Software, Groupware, Evaluation Framework, Empirical Investigation

INTRODUCTION

Team projects, including term-long group projects, have become increasingly common in upper-level undergraduate and graduate courses. College students, especially those who enrolled in online classes, face challenges when working with their peers in team projects. Collaboration software can help users to communicate, share documents, track projects and automate workflows. Such tools can facilitate group work among project team members and work groups, so collaboration software is also known as groupware. Collaboration software features can be divided into two broad categories: synchronous and asynchronous. Synchronous collaboration tools require that a team work at the same time, whereas asynchronous tools allow a team to work at different times.

Collaboration software tends to meet specialized needs, and there does not seem to be a particular program which excels in every category. Therefore, businesses and other users need to analyze which functions are most important to them, and choose the best collaboration software for that specific function. For example, Asay (2008) states that "being a company with employees spread across the United States and Europe, Alfresco has long used Skype to cut costs and as our common instant messaging platform." This shows that Skype is useful both in reducing costs and keeping long-distance employees in contact with each other. However, Skype's downfall comes in the form of poor voice quality and poor security. The IM client could infect a company network with malware (Blackwell, 2009). So Skype may be a good tool for small businesses, but not for larger companies.

Collaboration tools have been growing very rapidly and become more available to end-users in recent years. The high accessibility of collaborative tools provides multiple perspectives as it allows different people to collaborate easily and quickly via the Internet. Dumova and Fiordo (2009) discussed many features of the internet-based collaboration tools such as file sharing and discussion forums. Raduta (2014) describes ten very useful online collaboration tools.

The benefits of collaboration software include enhanced communication, sharing of documents among team members, tracking activities and integration of planning, and scheduling and coordinate work effort among group members (Whitehead, 2007, Quinn, 2009, and Berman et al, 2012). Banker, Bardhan and Asdesmir (2006) examine many firms who used collaborative product commerce (a specific subset of collaboration software) in a real world setting. They find that this

collaborative product commerce leads to higher overall product quality, lower development costs and shorter design cycle time. They conclude that collaborative software can improve overall performance among development teams.

Lomas, Burke and Page (2008) investigated how collaboration tools can affect classroom performance. According to them, instructors who use collaboration software can extend the informal interactions that occur in classrooms and hallways and create new frontiers for collaboration and innovation. Hinchcliffe (2013) argue that as collaborative software can effectively reduce time and distance, make the right information readily accessible to track activities within the organization, and establish clear digital pathways, the workplace collaboration can be boosted and team-based performance can be improved.

We recently surveyed over 100 students who majored in information technology at a regional university located in the southeast USA. When being asked about the importance of group collaboration software, 56% of the participants thought groupware would be useful to team project in on-campus class setting, and 77% the participants recognized the importance of groupware in online team collaboration. However, despite the obvious benefits of groupware, only 49% of them ever used groupware in their class team projects. 60% of the participants claimed that the reason they did not use groupware is because they were not familiar with it. In addition, there are many products on the market that could be used for team collaboration and it is often difficult for users to agree and use the best one.

This study aims to investigate what collaboration tools would be a good fit for student team work in a university setting. We are also interested in promoting the selected groupware and empirically test its effectiveness. The rest of the paper is organized as follows. Section two presents detailed research design including groupware evaluation framework score scheme. Section three concludes the paper by discussing the implications of the research.

RESEARCH DESIGN

This research proposes to conduct an empirical study on groupware. The research was planned in three phases:

1. Discover the important features of team collaboration software through student surveys
2. Develop an evaluation framework based on survey results and assess the available groupware using the evaluation metrics.
3. Make recommendation to the users and empirically test it for its effectiveness.

The overall research design is illustrated in figure 1.

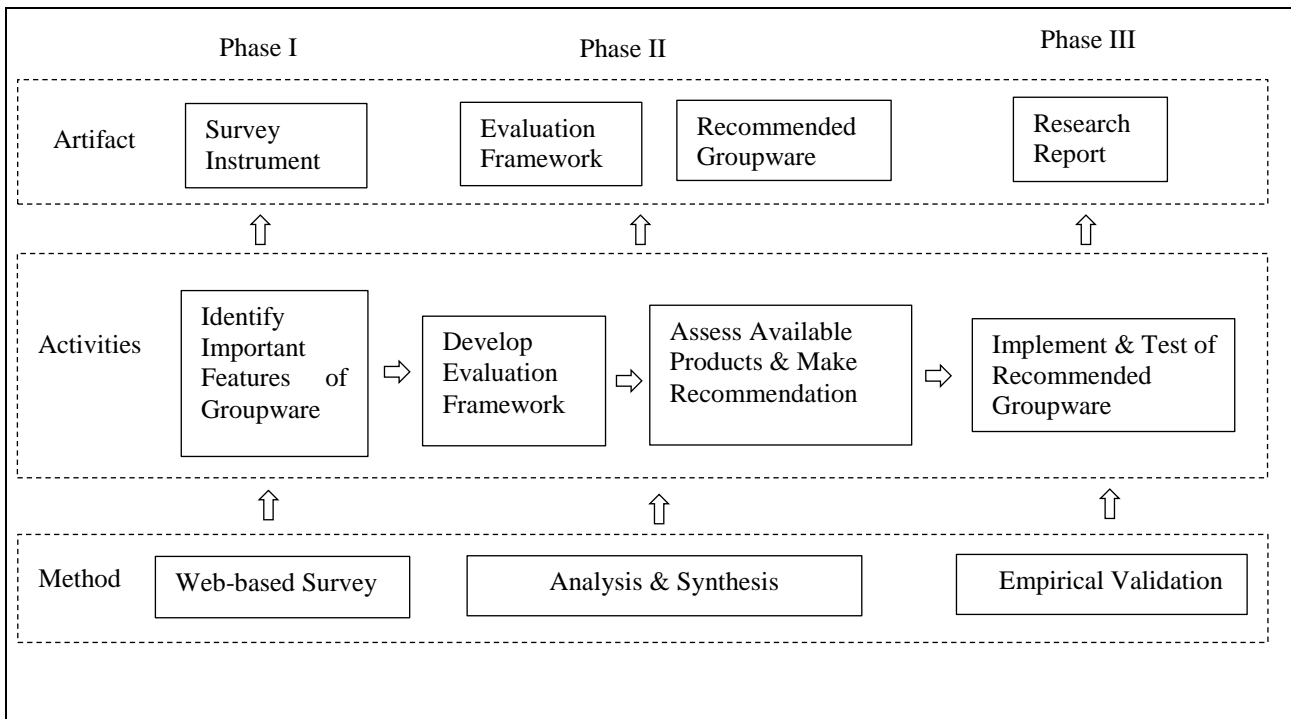


Figure 1. Research Design

The goal of phase one is to identify the important features of a groupware in a university setting. Student survey is used as the major research method. The survey instrument is built based on the literature which collects the following information: 1) demographic information; 2) participants' experience with team work groupware; 3) participants' ratings on the features of groupware. Graduate students and undergraduate senior students at the participating university are selected as subjects of this study since most of them already had some team project experience. The participants were drawn from both online classes and traditional on-campus classes. The questionnaire will be distributed through the Web and totally voluntary to the participants. The output of this phase is the survey results.

In phase two of the study, the researchers first will create an evaluation framework for groupware by synthesizing the survey results and literature. The framework is a metric system containing different categories and each category contain several features related to groupware. Each category and each feature may carry different weight. A total score is used to indicate the merits of a groupware.

The assessment of the groupware is conducted in two rounds. In round one, the researchers identify a broad range of available groupware or team collaboration software in the market and perform initial assessment using the evaluation framework. Each researcher conducts the task independently. The difference of the assessment result is reconciled in group meetings. The goal of round one is to narrow down the selection of groupware to three or four for deeper analysis. In round two, each researcher pick one groupware and perform a thorough analysis using the evaluation framework created in phase one. The assessment process not only involves evaluate theoretically, but also includes installation and actual use of the groupware. At the end, the researchers get together and discuss their findings and come up with a recommended groupware. The recommendation may include a standalone groupware or a combination of groupware.

The groupware evaluation framework will be created based on weighted items in five major categories: File&Content, Team Communication, Project Management, Additional Features, and General Evaluations. Each item is assigned a weight based on the following rules (Table 1). Then each product was evaluated against each item using the following score scheme (Table 2). Then A weighted score which is the product of weight and score will be calculated and summed up for each category.

Weight of a Feature	Meaning	Rule
5	Very high importance	60% or more of the respondents think this is a very important feature, or between 40% and 59% of the respondents think it is a very important feature and/or more than 80% think it is somewhat or very important feature
4	High importance	Between 40% and 59% of the respondents thinks this is a very important feature and between 60% and more than 79% think it is somewhat or very important
3	Medium importance	Less than 39% of the respondents think this is a very important feature and between 60% and 79% think it is somewhat or very important
2	Low importance	Less than 39% of the respondents think this is a very important feature and between 40% and 59% think it is somewhat or very important
1	Very low importance	Less than 39% of the respondents think this is a very important feature and less than 40% think it is somewhat or very important
0	Not important	Do not fit in any of the categories above

Table 1. Groupware Evaluation Framework – Weight Scheme

Score of a Feature	Meaning
3	Fully satisfies
2	Substantially satisfies
1	Partly satisfies
0	Does not satisfy

Table 2. Groupware Evaluation Framework – Score Scheme

The output of phase two are the evaluation framework and recommended groupware.

The objective of the phase three is to empirically validate the effectiveness of the recommended groupware or groupware combination. The researchers have two hypotheses: 1) the recommended groupware would facilitate team collaboration in either an online class or a course setting that teams have face-to-face meeting times; 2) the impact of the recommended groupware would be more prominent in an online class setting than in an on campus class setting. Thus, a two by two factorial design as shown in table three is used in this study. The findings will be summarized and reported in a research paper.

	With recommended groupware	Without recommended groupware
Online Class	Group 1	Group 2
On campus Class	Group 3	Group 4

Table 3. Two-by-two Factorial Design for Empirical Study

DISCUSSION

Groupware is an important tool for users to work with their peers in the team project. Bounded in college environment, this study presents a research design that could recommend and validate a groupware based on students' needs. The phase one and major part of phase two of the study have been completed. We created a questionnaire based on previous literature on the groupware and distributed the survey to students at a regional state university in the southeast of US. The findings are currently being analyzed and will be reported in future research publications.

The implication of this research can be summarized as follows. The research methodology can be easily adapted to study groupware in a different setting such as corporate environment. The research method can be used as an exemplar for product selection type of project. The evaluation framework, once developed, could also be used to assess groupware in other domains. The empirical validation, when successfully carried out, will be the first of its kind based on our knowledge and the results of the study will be beneficial to the adoption of groupware.

REFERENCES

1. Asay, M. (2008) "Skype: The ultimate collaboration tool?" CNET. Retrieved from http://news.cnet.com/8301-13505_3-9984159-16.html.
2. Banker, R., Bardhan I., and Asdemir, O. (2006) "Understanding the impact of collaboration software on product design and development", *Information Systems Research*, December 2006.
3. Berman, A., Barnett W., and Mooney, S. (2012) "Collaborative software for traditional and translational research", *Human Genomics*, September 2012.
4. Blackwell, G. (2009) "The pros and cons of Skype for business". *Small Business Computing*, April 2009.
5. Dumova, T., and Fiordo, R. (2009) "Handbook of research on social interaction technologies and collaboration software: concepts and trends", *Information Science Reference*, July 2009.
6. Hinchcliffe, D. (2013), "Today's enterprise collaboration landscape: cloudy, social, mobile", *ZDNet*, July 2013.
7. Lomas, C., Burke M., and Page C. (2008), "Collaboration tools", *Educause Review Online*, august 2008.
8. Quinn, L. (2009), "Comparing options for collaboration software", *Idealware*, January 2009.
9. Raduta, B. (2014), "10 examples of very useful online collaborative tools", *Top Design Mag*, 2014.
10. Whitehead, J. (2007), "Collaboration in software engineering: a roadmap", *IEEE Computer Society*, 2007.