A Collaborative Tool for Communities of Practice to Share Best Practices

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Abstract. Traditionally, members of communities of practice collaborated through traditional means: word of mouth, conferences, lectures and hand written notes. However, the emergence of online environments, have led to the use e-mails and other web-based tools. However, communities of practice members have a variety of different technological skills and varied access to technology which limits novice users from expressing themselves comfortably despite their limited technological skills. This research focuses on presenting an environment that is easy to use, effective, efficient, and satisfying for all members. The webOS (cloud) tool to foster K-12 teachers and 4-H club communities provides the best framework to share best practices with easy, efficiently, and with satisfaction. The experimental portion involves a list of tasks that provides design experts an opportunity to assess the usability, usefulness, and efficiency of design. The users' post–questionnaire provides a feedback on the overall usability of the system for novice users.

Keywords: Programming, User interface, Usability, WebOS (web operating system), Communities of Practice, Computer Collaborative Work.

1 Introduction

The usage of the term CSCW-Computer Supported Collaborative Work inside various academic fields and fortiori across the fields is wide. Beside the wide range of usage of the term, this research will focus and include specific tasks which will require members / participants to converge to a shared understanding of CSCW among members of communities of practice for the purposes of data collection, analysis and evaluation to a certain the impact of the study on subjects. The study chooses to utilize a cloud based tool to support communities of practice in a method that is user friendly and has a greater ease of use compared to most social CSCW networks systems. This work is inspired by the appeal of FaceBook and its ease of use. We are motivated to create an environment that will support a large community of practice in virtual space. The environment will encourage k-12 teachers and 4-H club community of practice members to share and re-use best practices in the initial phase of the study.

Nowadays a lot of research is focused in the area of CSCW after researchers from various academic disciplines realized that computers should be designed according to

the user's needs and that various technological designs and efforts can greatly benefit from the input of others in the areas of cognitive science and humanities. This has lead to a new theory of user centered design. However, this research focuses on CSCW in relation to: 1) sharing and re-uses of best practices by community of practice members and 2) usability of collaboration tools and the effects on novice computer users: (i.e. Human Computer Interaction of system interfaces). In this research, a CSCW cloud tool will used and evaluated by authors to study community of practice members working together to share their best practices. This study will investigate and focus on usability and security issues that affect online environments. This is to ensure that the designed system (cloud) tool meets minimum online usability standards and has robust security features to safeguard the privacy of member users. We will utilize HCI techniques and design guidelines to ensure that our system is easy to use and user friendly for novice users. To gather feedback on how to improve the initial system interfaces and security, online technophobia and usability test surveys will be conducted between the validation user populations to gather information on how to improve on the initial design requirements of the system. The usability experts, K-12 teachers and H-4 clubs community of practice members have been nominated as the initial user population to test and validate the system before deployment. The survey responses will provide valuable input for re-designing user interfaces as well as insight on how security concerns are a major issue among novice computer users. However, the fact whether security issues are a major concern in the HCI area will not be addressed by this research.

CSWC is an area of study with numerous unexplored benefits for a cross section of the population groups [8][7]. For example, through CSWC K-12 teachers can be encouraged to share and re-use best practices as a community of practice like(to emulate) the business industry which has highly benefited from sharing best practices through collaboration (e.g. the software development industry that successfully utilizes code-re-use during software development through collaboration). This project aims at evaluating and validating a tool or framework that can be used to encourage sharing of best practices within a community of practice to steadily benefit and enhance member's career aspirations significantly through CSCW as witnessed in the code-re-use within the software development industry [9]. The research will validate the need to incorporate a tool to support virtual communities to share and re-use of best practices and take advantage of the numerous benefits offered by the CSCW tools. This work will be validated through surveys about the FYFL cloud and a virtual community that has been developed in our HCI lab in collaboration with the Alabama e-extension department. The research findings are aimed at highlighting the untapped benefits of collaborating through the CSWC tools as well as the hindrances compared to traditional methods. These benefits include:

- Possibility to Communicate Effectively
  - There is a high a possibility for members of a community of practice to learn how to communicate effectively, by reaching out to each other and building trust and understanding through friendships by seeking common ground[6][4].

- Motivation to Collaborate
  – Members of community of practice groups will build a sense of responsibility by feeling obligated to the group and will take responsibility for the group. In due course they will learn to be responsible and become team players with the skills necessary to succeed in today's world [6][4].

- Efficient Access to Information
  – Members of community of practice will access information and other resources easily without the restriction of time and place, unlike the prevalent face-to–face collaboration system. In addition the permanency of records on shared practices, the independence of time and place to access information will allow members (e.g. students, teachers, and 4-H members) to learn and complete the tasks at hand remotely. This will also eliminate the fear of starting from scratch when the need for a practice arises and encourage members to focus on the task at hand [6][4]

2   The Approach to the Research

This study has identified K-12 teachers and 4-H club members as the initial subgroups that will benefit from collaborative interaction in respect to sharing best practices on various topics by the members. The main criterion for choosing members to participate in the study is a voluntarily acceptance of teachers and schools to participate by willingly subscribing to use the FYFL cloud tool that we have developed to collaborate and share best practices. Participants will then provide a feedback on its usability and how easy it is to use by novice users for collaboration purposes.
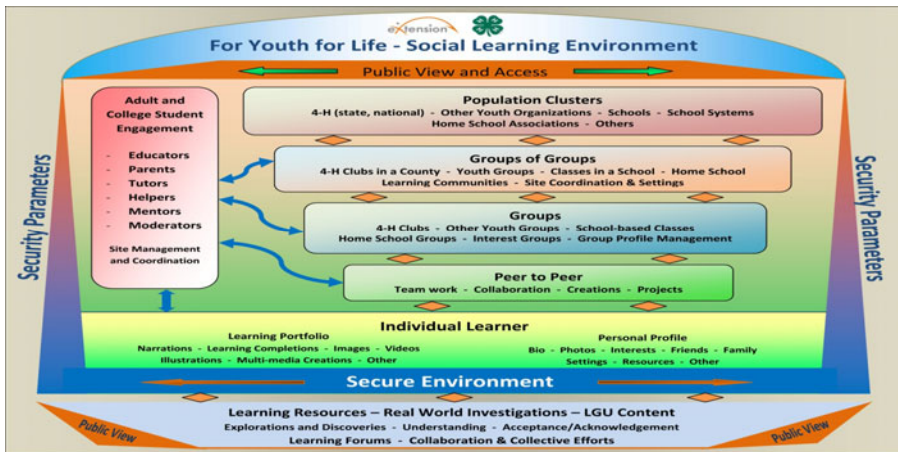
Fig. 1. For Youth, For Life – The Envisioned Social Learning Environment Copyright © 2009 Auburn University, Alabama Cooperative Extension System

The study will create an environment to leverage existing tendencies of human social nature and utilize this in a collaborative environment. We anticipate that the participants of this work will have improved efficacy in of their computer literacy, improved educational performance and more intrinsic motivation to spend more time concentrated on efforts that promote scientific content materials at the end of the study. In the second phase of the study, participants will work together as teams in a community of practice (e.g. student and teacher teams) that will utilize and contribute to this sharing and learning environment [2].The results of this study will be used to support the creation of an environment that supports communities of practice in creating and sharing more content materials in a virtual community in a cloud environment as outlined in Fig. 1 The environment will support improved use of materials within the virtual community leveraging the ease of use and popularity other social networking environment such as FaceBook.

Our hope is that this method of resource presentation will increase the usage of educational materials and applications among community of practice members names of the authors should be checked before the paper is sent to the Volume Editors.

3   Preliminary Results

A preliminary study conducted by Social Networking Teaching Tools: A Computer Supported Collaborative Interactive Learning Social Networking Environment for K-12 in the spring 2010 surveyed 33 teachers in North Carolina city schools with different backgrounds and levels of education using a forum based prototype system. The surveyed group filled the usability survey to express their experiences of the system. The results were encouraging since 70% of those surveyed felt that a forum type virtual tool will be good for K-12 education and expressed confidence in using the proposed tool to teach if it were available [1]. To confirm and validate the preliminary results, this study extends the previous study and focuses on creating a secure and user friendly environment for a community of practice to share best practices. The proposed system will require the three to entangle to safety and privacy of the community members while on line. For the success of the system, the stakeholder's opinion will weigh heavily on the adoption and usability of the system. As stakeholders evaluate the system they will give their opinions and suggestions to improve chances for the future adoption and improved usability of the system. To verify the usability, a survey based on Norman's seven usability principals will be conducted on the enhanced system and its results contribute to the viability of the Tool for sharing best practices within a community of practice.

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