Development of Communication Tool for Informal Learning in Small Groups

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Abstract: Communication tools based on the Web, such as "Twitter" and "Facebook" have not only recently been methods of simple communication but also of managing and sharing information, or what is called "informal learning". We developed an asynchronous communication tool in this research, which means that we can access it at any time and from anywhere. This communication tool can also be used by small groups, such as those in research laboratories and class rooms, who can manage and share the information interactively.

Keywords: Web, informal learning, asynchronous communication, interactive

Introduction

Learning consists of two basic methods, the first is to learn what has been prepared in school, and the second is to learn spontaneously regardless of learning courses or learning methods that have been prepared in advance. We define the first method as formal learning and the second as informal learning. Searches on the Internet, social networking sites (SNSs), and chatting are kinds of informal learning. It is also defined non-formal learning in other study [1][2]. According to research by "Conner, Marcia L", informal learning is more effective than formal learning and it encompasses over 70% of learning opportunities [3]. In fact, we are in passive mode during formal learning when we learn what has been prepared, such as learning in schools. Informal learning, on the other hand, is spontaneous because we are in interactive mode. Informal learning becomes more effective as a result. Also, informal learning in small groups is more efficient than studying alone because we can share information interactively and can create new ideas based on conventional ones. Therefore, we would like to develop a new communication tool that enables informal learning in small groups.

1. Support of Informal Learning

Learning through communication, such as SNS chatting is interactive and effective for informal learning. If we can provide a better communication environment, we can become more interactive and learn more efficiently [4][5]. Informal learning based on the Web, such as Facebook and Lino, has recently been becoming popular. These tools are quite handy and easy for users to use. Facebook has group function. With this function, users can have various advantages which are that they can make public/closed groups and communicate and share files in them. Also Facebook has time-line interface that can

indicate messages in order of age. Lino is an online web sticky note service that can be used to post memos, to-do lists, ideas, and photos anywhere on an online web canvas.
Taking the advantage of Facebook and Lino, we developed a new communication tool that can:

1) Work based on the Web,
2) Be easy to use,
3) Work asynchronously,
4) Categorize similar messages in the same area, and
5) Display information based on a time-line.

2. Functions

2.1 Chatting Function

Users can attach messages to the virtual digital board with this function, which can be either text or images. User can respond to the each message. Each message on the board has two unique tags which are Time-stamp and author information. The time-stamp and author information is displayed in color to minimize the size of message (Fig. 1). Users can reallocate messages according to the time-line with time-line view (Fig. 2). They can place the messages wherever they want on the board so that they can categorize similar messages in the same area. However, it has a disadvantage in that users do not know which message was written first. As previously described, the messages have a unique tag that includes author information and a time-stamp. The time-line function utilizes the time-stamp information in the tag and reallocates messages according to the time-line.

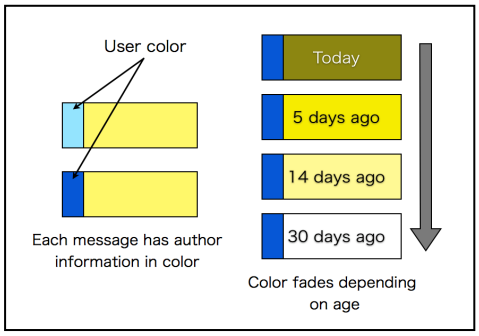

Fig. 1: Time-stamp and author information

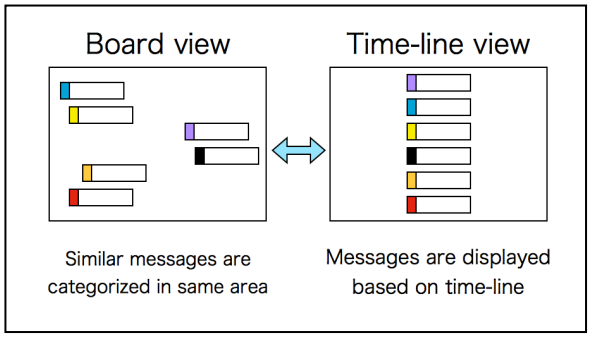

Fig. 2: Board view and time-line view

2.2 Paint Function

Users can draw figures with this function. Users can specify the color, width, and transparency of the drawing pen. They can draw figures with this pen and can remove them with the eraser. Multiple people can simultaneously access this system because it works in asynchronous mode. The system has a temporal layer for multiple people to access it simultaneously so that they can draw images on the temporal layer and save images from the layer when users utilize the “save” function.

3. Results

We will describe an example of how this virtual digital board was used. Fig. 3 shows how we used this board in small groups. The display area in the browser is board size. The

messages in the rectangles in yellow are what users were chatting about. They can chat in the rectangular boxes and place them wherever they like on the virtual digital board.

The colors in the rectangles have information that indicates how old the messages are. The colors in the rectangles will fade depending on age so that we can see how old this information is at a glance. Fig. 3 has an example of how we used the virtual digital board. The users managed and shared information about TeX. Fig. 4 shows messages that have been reallocated according to the time-line. Users can also see the details on the time-stamp and author information integrated with the messages.

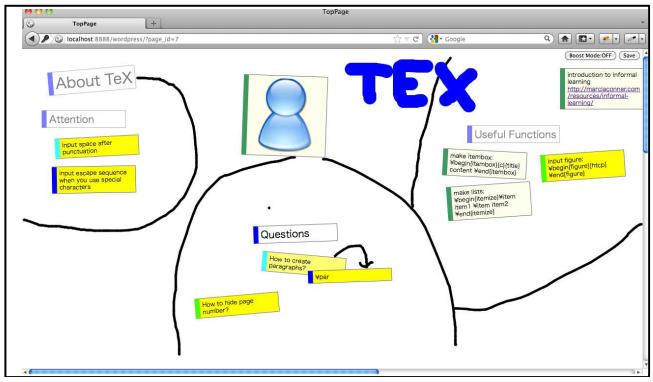

Fig. 3: How to use digital virtual board

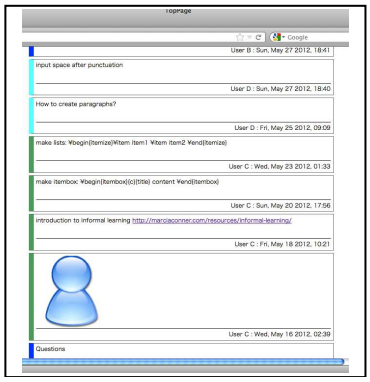

Fig. 4: Time-line view

4. Conclusion

We explained the usefulness of informal learning and we believe that informal learning by multiple people, such as those in SNS chats, is more effective than formal learning. Therefore, we developed a communication tool to support informal learning by small groups. We applied a whiteboard interface in the design process to make it easy for users to manage and share information. In addition, we adopted a time-line method to display and summarize information that users wrote. We believe that the tool we developed will promote communication by small groups and help to support informal learning. We intend to use this tool in experiments with small groups in the next process to ensure that this tool can become more effective for informal learning.

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