An Analysis of Synchronous and Asynchronous Communication Tools in e-Learning

Francis Pol Lim

AMA University
59 AMA Bldg. 2, Panay Ave.,
Quezon City, Philippines
limfrancispol19@gmail.com

Abstract. This paper analyzes the different synchronous and asynchronous communication tools that are being used in e-learning. Furthermore this discusses the process of communication and shows its importance in the field of education. Different communication tools will be discussed along with its usability and limitations

Keywords: Synchronous Communication, Asynchronous Communication, Communication Tools, e-Learning

1   Introduction

Communication is a process of transmitting or sending a message [1]. This can involve several iterations before mutual understanding is achieved. Success can only be attained when all parties involved has shared the same understanding of what is being communicated [2,3].

Communication is a two way process where both sender and receiver take turns to send and receive a message. This is depicted in Schramm's Model of Communication which is shown in Figure 1 [4]. The model shows that the communicator is the source of information. The communicator translates his idea into words, symbols, pictures, graphics voice, tone, facial expressions and body language through a common medium. The receiver then picks up the message and decodes it. The decoding process is not that simple because the receiver interprets the message using personal experience, expectation, comprehension level and other factors that influence his perception or understanding [5]. After decoding, the important thing now is the one that completes the process of communication which is known as the feedback. This is signifies that the message of the sender has been received. The nature of the response usually shows the quality of understanding. Basically, we can say that the elements of communication include the source, medium, receiver and feedback.
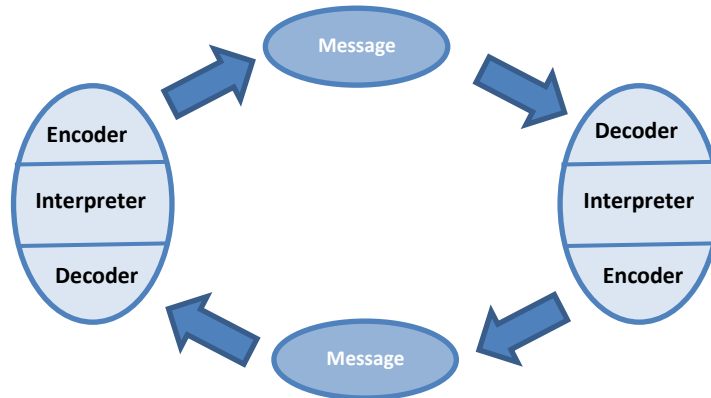
Fig. 1. Schramm's Model of Communication

For the communication process to happen, communication tools may play an important part in facilitating collaboration between individuals involved. Communication can be classified as synchronous or asynchronous. The most common form of synchronous communication is the face-to-face discourse. But when distance is being considered, synchronous communication is still possible with the intervention of technology or other tools [6]. On the other hand, asynchronous communication does not happen in real-time. Those who are involved in this type of communication may read and respond as their respective schedules permit them to do so. This may also be facilitated in traditional ways or with the aid of technology tools [7].

From an educational perspective, the process of integrating synchronous communication in teaching and learning may also be termed as synchronous education, this happens in the traditional classroom wherein the teacher and the students interact with each other at a given time and place. On the other hand, early models of asynchronous education did not have effective asynchronous communication for the system lacked student-teacher interaction as well as student-to-student interaction.

In the age of technology, e-learning environments were born. The theory of e-learning describes the cognitive science principles of effective learning with the use of electronic technology [8,9]. Individuals engaged in e-learning are usually separated by time and place so the utilization of communication tools is necessary to facilitate interaction and learning.

2   Analysis of Synchronous Communication Tools

The advantages of utilizing synchronous communication tools is that it facilitates real-time collaboration, just like in the traditional classroom the student and the teacher may interact spontaneously and the participants can have immediate feedback from each other. The presence of cheap or even free technologies for real-time online

collaboration may also make it financially feasible for students to have such technology on their laptops. This may help them communicate one-on-one or by group. Utilizing these tools also helps the participants develop effective social skills and may lead to increased motivation and engagement leading to an effective learning. There are also disadvantages in using a specific synchronous communication tool for they have their respective limitations. At present, it may be difficult to control the class if it contains many students, so as much as possible asynchronous online classes are divided into smaller groups. Because of this, this may lead to an intensive time commitment for the online teachers. Furthermore, since this involves the usage of technology, technical failures and poor internet connectivity may affect the quality of communication. Table 1 shows the different synchronous communication tools along with its usability and limitations.

Table 1. Synchronous Communication Tools

Communication Tool	Usability	Limitations
Video Conferencing	Real time interaction Seeing the person that you are communicating with can give important visual clues	Quality is dependent on bandwidth There may be short time lag between speaking and receiving a response that can disrupt the natural flow of a conversation Documents and other presentations can only be shared through the presenter's camera
Web conferencing	Real time interaction Permits sharing of presentation, documents and application demonstration	Quality is dependent on bandwidth There may be short time lag between speaking and receiving a response that can disrupt the natural flow of a conversation
Audio conferencing	Real time interaction Collaborative discussions that involve certain number of people	Quality is dependent on bandwidth There may be short time lag between speaking and receiving a response that can disrupt the natural flow of a conversation Does not incorporate visual learning
Live chat	Real time interaction Text and graphics capabilities are available for Information sharing of low-complexities Provides documentation of student interaction	Mostly text based and as such slows down communication rate May lead to misinterpretation of expressions
White boarding	Real time interaction Demonstration and co-development of ideas	Bandwidth based, and at times effective with audio conferencing
Application sharing	Real time interaction Demonstration and co-development of documents	Bandwidth based, and at times effective with audio conferencing

3 Analysis of Asynchronous Communication Tools

The advantages of asynchronous communication tools is that its availability anytime and anywhere. Because students can access these tools 24/7, it provides them more time to study and reflect on the topics of discussion. The modern learning management systems incorporate various asynchronous communication tools in order to have evidences of collaboration which may form part of the grading system. This type of communication is very useful even if there are too many students in the online classroom. The sad part here is that, some students may not get immediate feedback thus prolonging their agony in unclear terms. Learners may have the tendency to be irregular in participation and sometimes students that are not well disciplined may tend to copy paste some assignment from the internet, thus making them liable for plagiarism. Written ideas may sometimes be interpreted, and again it's hard to get immediate feedback for clarification purposes. Table 2 shows the different synchronous communication tools along with its usability and limitations.

Table 2. Asynchronous Communication Tools

Communication Tool	Usability	Limitations
Discussion forum	Collaboration and sharing of ideas can be made over a certain time period More time for reflection on the topic of discussion Easy to form and control the level of participation	May lead to misinterpretation of other people's ideas May take longer to have feedbacks
Web logs	Dissemination of ideas, comments, images and other documents is easy and open to all More time for reflection on the topic of discussion Provides documentation of student interaction	May lead to misinterpretation of other people's ideas May take longer to have feedbacks May require technical knowledge in forming web logs
e-mail messaging	Distribution of course materials on one-to-one or one-to-many basis Privacy in communication	It is difficult to get instant reply to mails especially with large classes
Social media messaging	Message delivery such as important announcements Group chat may serve as discussion forum Personal messaging may be utilized by the teacher for mentoring purposes Provides documentation of student interaction	If the receiver is not online, you will have no immediate feedback Difficult to control the level participation Messages in the group chat cannot be deleted, thus bad or unnecessary participations can't be controlled

4 Conclusion

In e-learning, both synchronous and asynchronous communication tools have their own advantages and disadvantages. This paper has enumerated the communication tools and has shown their respective usability and limitations. In modern, learning management systems, it is important to know the right combination of these tools to improve instructions and promote effective learning.

References

1. P. Romero, et al., (1984). English for business: developing communication skills. Katha Publishing Co., Inc. Quezon: Philippines.
2. E. Tendero, (2009). Fundamentals of effective speech and oral communication. Mutya Publishing House, Inc. Malabon City: Philippine
3. FME, (2013). Effective Communication Skills. www.free-management-ebooks.com
4. University of Nairobi, (2016). Introduction to Communication. goo.gl/gDW33n
5. Aquino, F. 1999. Speech and oral communication in academic and post-academic worlds. Grandwater Publications and Research Corp. Manila: Philippines.
6. S.K. Wang, (2008). The Effects of a Synchronous Communication Tool (Yahoo Messenger) on Online Learners' Sense of Community and their Multimedia Authoring Skills. Journal of Interactive Online Learning, vol 7, no.1, pp. 59-74.
7. M. Moallem, (2015). The Impact Of Synchronous And Asynchronous Communication Tools On Learner Self-Regulation, Social Presence, Immediacy, Intimacy And Satisfaction In Collaborative Online Learning. The Online Journal of Distance Education and e-Learning, vol.3, no.3, pp. 55-77.
8. R. E. Mayer, (2001). Multimedia learning. New York: Cambridge University Press.
9. R. E Mayer and R. Moreno, (1998). A Cognitive Theory of Multimedia Learning: Implications for Design Principles. University of California, Santa Barbara.
10. M. Attaran, (2007). Collaborative computing: a new management strategy for increasing productivity and building a better business. Business Strategy Series, vol. 8, no. 8, pp. 397-393.