

Non-Verbal Communication Behavior of Learners on Online-based Learning

Dila Umnia Soraya¹
*Department of Electrical
 Engineering*

Kartika Candra Kirana²
*Department of Electrical
 Engineering*

Slamet Wibawanto³
*Department of Electrical
 Engineering*

Heru Wahyu Herwanto⁴
*Department of Electrical
 Engineering*

Chandra Wijaya Kristanto⁵
*Department of Electrical
 Engineering*

Abstract— In online-based learning, there is limited interaction between teachers and learners who do not meet directly. However non-verbal communication indicates the emotion that is often called as a driver of learning success. Therefore, in this study, we are encoding the non-verbal behavior of learners during online-based learning. This study is expected to be a reference for other studies, especially the development of online-based learning which is adaptive to the behavior of learners. We observed some behaviors consisting of facial expression and eyes contact.

Keywords— *non-verbal communication; behavior; learners; online-based learning*

I. INTRODUCTION

Technological developments direct the learning towards online-based learning [1]. The e-learning market growth reaches 65.4 billion dollars [2]. The main factor behind the use of online-based learning is not only to improve access and quality of education but also to reduce the costs and increase the cost-effectiveness. The students also can learn at their own pace with availability online lesson [3] Despite its pleasant advantage, there is the limited interaction between teachers and learners who do not meet directly, thus the buddying, feedback and a trigger of emotion understanding are needed to be considered [2]. In addition, [4] shows that they are lower than traditional learning in the involvement of learning.

Emotions thought of as a driver of learning success [5]. [6] shows that the learners who study with enthusiasm will process information more thoroughly than the bored learners. Even [7] shows the links between emotional and entrepreneur competencies where there are several emotions related to entrepreneur competence, such as the

ability of teamwork, the interaction with the outside world, the uncertainty, and the ambiguity. In traditional classroom learning, a teacher can observe the learners' expressions directly, thus the teacher adapts the learning to the emotions of the learners easily. However, in online-based learning, teachers cannot directly meet with learners, so the process of adaptation of learning to the emotions of learners becomes more difficult. however, emotion can still be observed through non-verbal communication. Non-verbal communication (NVC) is often associated with emotions [5] NVC is communication that delivers the message without words, such as gestures, facial expressions and eye contact, [8] In this study, we are encoding non-verbal behavior of learners during online-based learning. This study is expected to be a reference for other studies, especially the development of online-based learning which is adaptive to the behavior of learners.

II. LITERATURE REVIEW

A. *The Relationship between Emotion and Non-Verbal Communication*

Emotions are the human expression in response to circumstances [6]. Basically, emotions are classified as positive emotions and negative emotions. Emotion also separated into happy, sad, surprised, afraid, angry, and disgust [8]. In the learning context, there is Russell's Circumplex Approach that classifies emotion into interest, engagement, confusion, frustration, satisfaction, hopefulness, boredom, and disappointment [6]. Non-verbal communication (NVC) is communication that delivers the message without words, such as gestures, body language, and facial expressions. It also is displayed by objects such as clothing, haircuts, symbols, and speech

[8]. [9] link the human emotions and the non-verbal communication shown in Table 1.

Table 1. The Relationship between human emotions and non-verbal communication [9]

Emotion	Eye and Eyebrows	Forehead	Nose	Cheek	Mouth
happy	the bottom of the eyelid slightly raised, visible wrinkles and eyes narrowed	-	-	flushed and enlarged	lips and mouth widened, sometimes tooth looks
sadly	eyebrow raised	wrinkled	-	-	corner of mouth pulled down and lips trembling
surprised	all eyebrows lifted and eyes enlarged	-	-	-	jaw dropping and mouth open slowly
afraid	the upper eyelid lifted, the white part of the eye clearly visible, the lower eyelid tightened and lifted	wrinkled	-	-	lips drew □
angry	Eyebrows pulled in, eyes narrowed	-	some people's nose expands	-	lips tightly closed
disgust	the lower eyelid of the eye is raised and wrinkled	-	wrinkled	-	pressed both lips up or scowling

B. Online-based Learning

There are two online learning models in synchronous and asynchronous environments. In an asynchronous environment, the lesson can be accessed in every place and every time. In contrast to the asynchronous environment, synchronous environments allow learners and teachers to communicate in real time. This allows teachers to interact directly with the lesson. However, it requires more infrastructure, especially in the internet network. [3]

III. METHODOLOGY

The research methodology consists of (1) assumption of the problems, (2) study of literature, (3) data collection, (4) analysis, and (5) conclusions.

1. The assumption of the Problems and Study of Literature

This study aims to encode the non-verbal behavior of learners during online-based learning. It belongs to qualitative research because our expected results understand of life, behavior, and relationships of human interaction and that is not the statistical meaning. The subject of this study were university students with ages between 17-21 years. Then we study literature about the relationship between human emotions and non-verbal communication at the general age which can be seen in Chapter 2.

2. Data Collection

In order to encode non-verbal behavior, we observe 68 informatics student at the State University of Malang. We implemented an online learning environment in the asynchronous model. We use an unstable 8 Mbps bandwidth network. The lesson that we use in this research is object-oriented programming. It is displayed in the form of visual, audio, and text. The student

expression was recorded using the Canon EOS DSLR camera during the learning. Respondents also filled out a closed questionnaire to ensure students' perceived emotions.

3. Analysis and Conclusions

We analyze emotions through the videos of the students' expressions, such as eye, eyebrows, forehead, nose, cheek, and mouth. Then we compare the results of a closed questionnaire. We conclude the non-verbal communication behavior of learners based on the majority of expressions.

IV. RESULTS AND DISCUSSION

In this experiment, we did not find some emotions, such as surprised, afraid, and angry. Whereas happy, sad, and disgust is the dominant emotion that we captured. Figure 1 shows the prototypical result of happy expressions The happy is expressed when students enjoy and understand the lesson. Figure 2 shows the prototypical result of sadly expressions. The prototypical result of disgust expressions is shown in Figure 3.

There are 12 students feel happy about understanding the material. Besides that, 11 students felt sad because of difficulties in understanding the material. Moreover, there are 45 students shows that their emotional changes at the beginning to the end of the learning from happy to disgust. 31 students stated that it was caused by the internet connection is interrupted. Expression of disgust is also shown when the lesson that appears in the form of text without visual representation and when the internet network is not stable.

Based on Table 2, the characteristics of happy, sad, and disgusted learners during online-based learning are almost the same as those listed in Table 1. In addition, the happy and sad learners focus on the lesson. Despite its happy and sadly learners, the eye of disgust learners does not focus on the lesson. It occurs not only when the student feels difficulties, but also when the internet connection is interrupted.

Table 2. The Relationship of the emotions and non-verbal communication

Emotion	The Non-Verbal Communication While Accessing Online Based Learning				
	Eye and Eyebrows	Forehead	Nose	Cheek	Mouth
happy	(1) the bottom of the eyelid slightly raised, visible wrinkles and eyes narrowed (2) eyes focus on lessons	-	-	flushed and enlarged	lips and mouth widened, sometimes tooth looks
sadly	(1) eyes focus on the lesson (2) the eyebrow raised	Wrinkled	-	-	corner of mouth pulled down and lips trembling
disgust	(1) Eye do not focus on the lesson (2) the lower eyelid is raised and wrinkled	-	Wrinkled (some learners)	-	pressed both lips up or scowling
Surprised, Afraid, and angry	Not found	Not found	Not found	Not found	Not found



Figure 1. Prototypical Result of Happy Expressions



Figure 2. Prototypical Result of Sadly Expressions

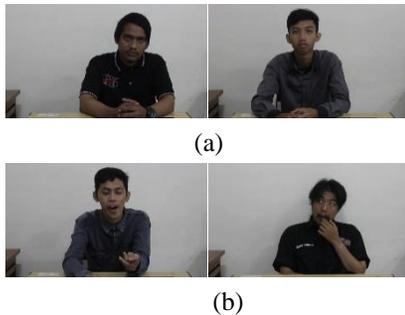


Figure 3. Disgust Expressions (a) Learning Difficulties (b) Internet is Interrupted

V. CONCLUSION

In this study, we can conclude that happy, sad, and disgust are the dominant emotion during online-based learning and the major characteristics that distinguish the learner's emotions through non-verbal communication are the focus level and the expression of the eye.

C. Acknowledgement

This research is supported by PNBPN Universitas Negeri Malang.

REFERENCES

- [1] María J. Hernández-Amorós and María E. Urrea-Solano, Working with Emotions in the Classroom: Future Teachers' Attitudes and Education, *Procedia*, Vol. 237, pp. 511-519 (2017)
- [2] Ritanjali Panigrahi, Praveen Ranjan Srivastava, and Dheeraj Sharma, Online learning: Adoption, continuance, and learning outcome—A review of the literature, *International Journal of Information Management*, Vol. 43, pp. 1-14, (2018)
- [3] Ritanjali Panigrahi, Praveen Ranjan Srivastava, and

- Dheeraj Sharma, Online learning: Adoption, continuance, and learning outcome—A review of the literature, *International Journal of Information Management*, Vol. 43, pp. 1-14, (2018)
- [4] Ya-hsun Tsai, Chien-hung Lin, Jon-chao Hong, and Kai-hsin Tai, The effects of metacognition on online learning interest and continuance to learn with MOOCs, *Computers & Education*, Vol. 121, Pp. 18-29, (2018)
- [5] P. A. Schutz and R. Pekrun, In *Educational Psychology, Emotion in Education*, Academic Press, pp. 333-348 (2007)
- [6] L. Darling, S. Orcutt, K. Strobel, E. Kirsch, I. Lit, and D. Martin, *Learning Classroom: Emotion and Learning*, California : Stanford University School of Education, pp. 90-104 (2010)
- [7] M. Lackéus, An emotion based approach to assessing entrepreneurial education, *The International Journal of Management Education*, Vol. 12, Issue 3, pp. 374-396, (2014)
- [8] Jessica L Tracy, Daniel Randles, Conor M Steckler, The nonverbal communication of emotions, *Current Opinion in Behavioral Sciences*, Volume 3, pp. 25-30, (2015)
- [9] Pekrun, T.s Goetz, A. C. Frenzel, P. Barchfeld, and R. P. Perry, Measuring emotions in students' learning and performance: The Achievement Emotions Questionnaire (AEQ), *Contemporary Educational Psychology*, Volume 36, Issue 1, pp. 36-48 (2011)