

Merissa Braza Ocampo, 2016

Volume 2 Issue 1, pp. 196-211

Year of Publication: 2016

DOI- <http://dx.doi.org/10.20319/pijss.2016.s21.196211>

This paper can be cited as: Ocampo, M. B., (2016). *Brainwaves of Emotion among Japanese EFL Learners as Proof of the Effectiveness of Family Environment Mode Approach (FEMA)*. *PEOPLE: International Journal of Social Sciences*, 2(1), 196-211.

This work is licensed under the Creative Commons Attribution-Non-commercial 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc/4.0/> or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA.

## **BRAINWAVES OF EMOTION AMONG JAPANESE EFL LEARNERS AS PROOF OF THE EFFECTIVENESS OF FAMILY ENVIRONMENT MODE APPROACH (FEMA)**

**Merissa Braza Ocampo**

Center for Language Research, University of Aizu, Aizu Wakamatsu City, Fukushima-ken 965-8580 Japan  
[merissao@yahoo.com](mailto:merissao@yahoo.com)

---

### **Abstract**

*This paper expands the author's recently developed EFL teaching method, the Family Environment Mode Approach (FEMA) (Ocampo, 2016), including students' narrated endorsements, which give further insight into students learning experience in support of the method's efficacy. The paper demonstrates that to surrender to the belief that someone has no ability to improve their English fluency obscures the heterogeneity of pathways leading to a thriving learning experience. The idea that failure is often a necessary prerequisite to success is emphasized. The study demonstrates that a combination of changing students' mindsets to become pro-failure and FEMA is effective in helping them improve their speaking ability, and freeing them from what can seem to be a 'cage of fear' with regards to making mistakes. A move from a traditional classroom situation, to one where failure is embraced is shown to be a process that can alleviate or perhaps eradicate anxiety and stress, opening up the gateway of learning. The use of Necomimi (brainwave cat ears) is incorporated to help demonstrate the effectiveness*

*of FEMA. Necomimi is a sophisticated, animatronic cat-ear headset that moves in various ways in response to how the device interprets students' mood, measuring the brainwaves of emotion while speaking English. The paper reports that strong student support for this method was observed. At the end of the school year, most of the participating students recommended that teachers of English and other subjects adopt FEMA more widely.*

### **Keywords**

Family Environment Mode Approach (FEMA), Brainwaves of Emotion, Growth Mindset

---

## **1. Introduction**

Emotions are quintessentially psychological phenomena. They provide life with its joys and sorrows, its energy, and in this sense, emotions are fundamental to what it means to be human (Rosenberg & Fredrickson, 1998). Everybody knows that emotions play an important role in our lives, yet the way by which emotions 'affect' has been a rather neglected topic in psychology. Experienced teachers recognize that classrooms can be venues for a great deal of emotional turmoil, yet affect has been an almost completely neglected topic in educational psychology. Similarly, the study of a second language can be an emotionally taxing experience, yet affect remains under-researched in applied linguistics. And finally, while it is commonly recognized that emotions are frequent motivators of action — for example, when we act out of fear, anger or happiness — affect has been disregarded as an area of motivation research (Dornyei, 2008). Why should this be the case? Rosenberg & Fredrickson (1998), explain this puzzling situation from the perspectives of cognitive psychology and behaviorism, in which it is not an objectively observable phenomenon. A further reason may be purely methodological: emotions are highly subjective and hard to measure in a reliable manner.

The recognition and classification of emotions is itself a contested area. While Dornyei asserts that there is little doubt that basic feelings such as anger and sadness are emotions, there is less agreement amongst researchers about whether to include moods (depression, irritability), long term emotions (love that continues for years), disposition (benevolence), primal motivational feelings (hunger, sexual arousal), cognitive feeling (confusion, déjà vu), and calm emotions (sympathy satisfaction). Most researchers tend to define emotions as brief, rapid responses involving physiological, experiential, and behavioral activity (Keltner & Ekman,

2000). Bodily phenomena are often underscored: salient indices of the phenomenon are strongly evident in racing hearts, tensing muscles, sweating palms, or hyperventilation.

While emotion and affect remain under-researched, recent work (Ocampo, 2016) has begun to examine them in the context of language education, where high motivation and low anxiety are shown to strongly influence the learning outcomes of EFL students. She addresses these issues by introducing the Family Environment Mode Approach (FEMA), an experimental method that sets out to reduce learners' anxiety and increase their motivation by challenging them to be 'pro-mistake'. Ocampo pointed out that while the importance of a conducive learning environment has been well established, few researchers have focused specifically on the value of creating a family-like environment mode, where students can help and accept the mistakes of others and provide criticism in a constructive way. In her study, FEMA was used with tertiary EFL learners in Japan, and helped them improve not only their academic performance but their emotional stability as well. The study included analysis of the brainwaves of emotion such as gamma and beta when students spoke English (Ocampo, 2016). The results showed that students felt relaxed, talked freely, felt everyone in the classroom was friendly, and accepted the comments and suggestions of their classmates positively. This highlights importance of a change in mindset, whereby the English classroom not only nurtures learners intellectually, but also emotionally and psychologically.

This kind of educational research may be particularly beneficial in the Japanese education setting. Kurita (1994) explains that Japanese students are generally weaker in conversation than in other language skills because their English teachers have traditionally focused on the grammar translation method, mainly to prepare students to pass university entrance examinations. In addition, cultural tradition has dictated that the teacher speak in class; volunteering answers, especially by calling them out, is atypical in the Japanese educational system. Moreover, many Japanese students fear making mistakes in front of the teacher and their peers. The situation Kurita describes has long been a reality among ESL learners in Japan. This is why the author strongly recommends FEMA (Figure 1 FEMA Framework) to second language teachers as an effective way of creating a calm, anxiety and stress free environment, particularly for Japanese learners. To foster such an environment, five key motivational factors that teachers should consider can be recognized. They should be enthusiastic, have a good relationship with students,

encourage students to think for themselves, enjoy their progress and success, and importantly, create a safe and supportive learning environment (Wilson, 2012).

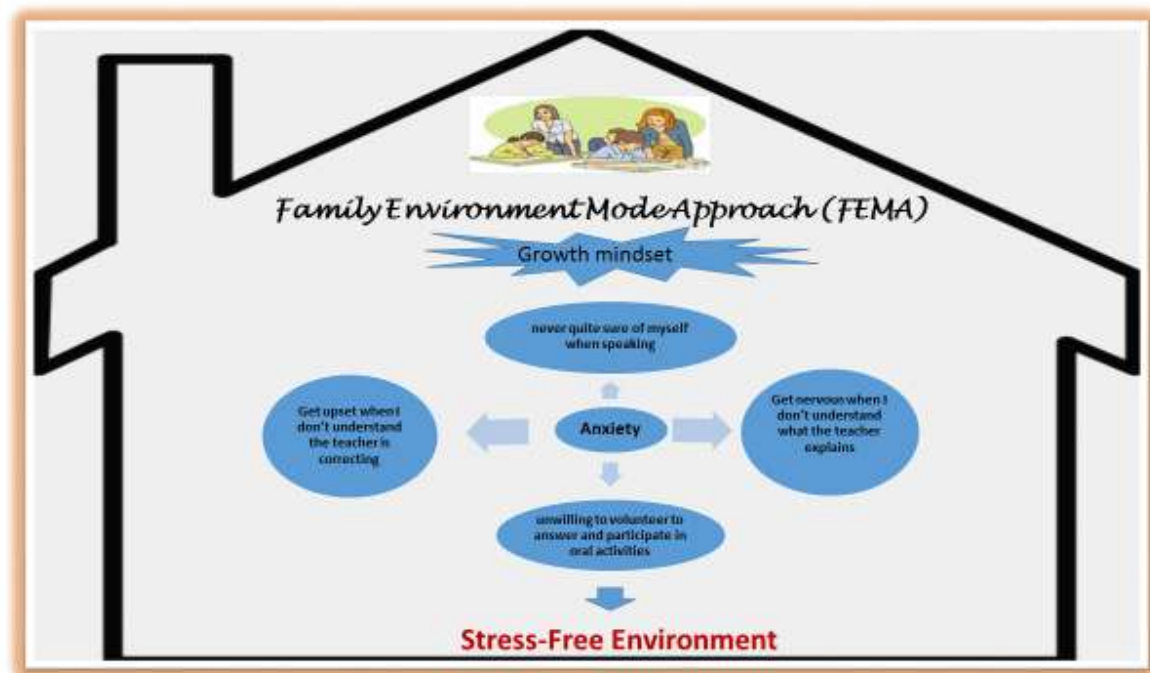


Figure 1: FEMA framework

## 2. Methodology

This study began with the following hypothesis:

1. FEMA can alleviate stress and anxiety and create a fun and stress-free environment.
2. FEMA can motivate students to accept each other as a family, and accept mistakes and failures as a challenge on the road of success. Changing students' minds from a traditional to a Family Mode Environment can help them develop a growth mindset.

The researcher also bore in mind the following 5 research objectives were also important:

1. To examine students' anxiety using Foreign Language Classroom Anxiety Scale (FLCAS) after the implementation of FEMA.
2. To know the effect of FEMA as a result of changing their mindset from a traditional to a FEMA classroom.

3. To alleviate students' fear by using FEMA to promote a fun and stress-free environment in the classroom.
4. To understand students' perception of their teachers after the implementation of FEMA.
5. To know the extent to which students positively accept FEMA and recommend its use in the classroom.

The research was conducted during class time and involved four main phases. These included introduction/presentation to students and ongoing motivational guidance, administering student questionnaires, measuring the brainwaves of emotion using *Necomimi* (brainwave cat ears), and completing a written confirmation of whether or not to recommend FEMA. During the introductory phase, the purposes, objectives and expected outcomes and importance of FEMA were explained and demonstrated to students as a group during class time. After the initial presentation, these ideas were regularly re-emphasized with the intention of fostering a growth mindset and feeling of belonging. Questionnaires given to students help to probe their subjective experience of the learning process. After FEMA had been implemented for a period of six weeks, students answered both the Foreign Language Classroom Anxiety Scale (FLCAS) and Students Perception of the EFL Teachers (SPEFLT) questionnaires (Horwitz, Horwitz, & Cope, (1986). These questionnaires were given to students in English with a Japanese translation provided. The list of specific questions can be examined in the appendices of a related publication (Ocampo, 2016).

One of the most distinctive features of this research design was the use of *Necomimi* to measure the brainwaves of emotion while speaking English during phase three of the project. The device was used voluntarily in a family-like group setting as described earlier by students in an Intensive Speaking Class (ISC). The checking of brainwaves was a collaborative activity, which involved the researcher asking questions to students, while other student participants monitored these students' brainwaves. The *Necomimi* indicate students' emotional state while speaking English via a variety of directional movements. These movements are determined by the particular light-touch brainwave sensor that is picked up by the ears. For example, if the student is focused, the ears perk up; if relaxed, they droop. In the case of a reading for 'happy' the ears wiggle. At the present time, this technology is limited: the ears cannot pick up incandescent rage, existential sadness, or anything in between. Nevertheless, the readings were sufficient to establish general stress levels during this exploratory study and added a

characteristic novelty, which helped to engage students in the project. Finally, students were asked to write of their own volition whether or not to recommend that FEMA be used by other teachers.

### **3. Results and Discussion**

In this study, it was not the researcher's intention to analyze the grades of the students, but rather to focus on emotional stability in the classroom while implementing the syllabus of the ISC and a communication class. She became the students' *Ma'am/Mom* and a 'gatekeeper' to monitor their emotions by utilizing FEMA's homely atmosphere to boost their moral, while allowing them to accept failure and expose themselves to making mistakes, resulting in personal growth. Aligned with Asher (1972), the researcher believes that an important condition for successful language learning is the absence of stress. First acquisition takes place in a stress free environment, whereas the adult language-learning environment often causes considerable stress and anxiety. The key to stress-free learning is to tap into the natural bio-program for language development and to thus recapture the relaxed and pleasurable experience that accompanies first language learning.

#### **3.1 Result of Foreign Language Classroom Anxiety Scale**

Japanese learners are known to be modest. Some are introverted, so often they are hesitant to speak, especially in front of other people (Doyon, 2000; Hinenoya & Gatbonton, 2000; Matsumoto, 1994). FEMA's role is to motivate and challenge them to speak with no hesitations and alter their mindset gradually, leading them to accept failure and mistakes positively. Of the factors that participants considered to be affecting their anxiety in speaking English, the researcher chose areas with the first 3 highest scores. These were: They never felt quite sure of themselves when they were speaking in a language class (60%), they got upset when they did not understand what the teacher was correcting and they got nervous when they did not understand every word the language teacher says (55%), and they felt embarrassed to answer voluntarily in the class (54%).

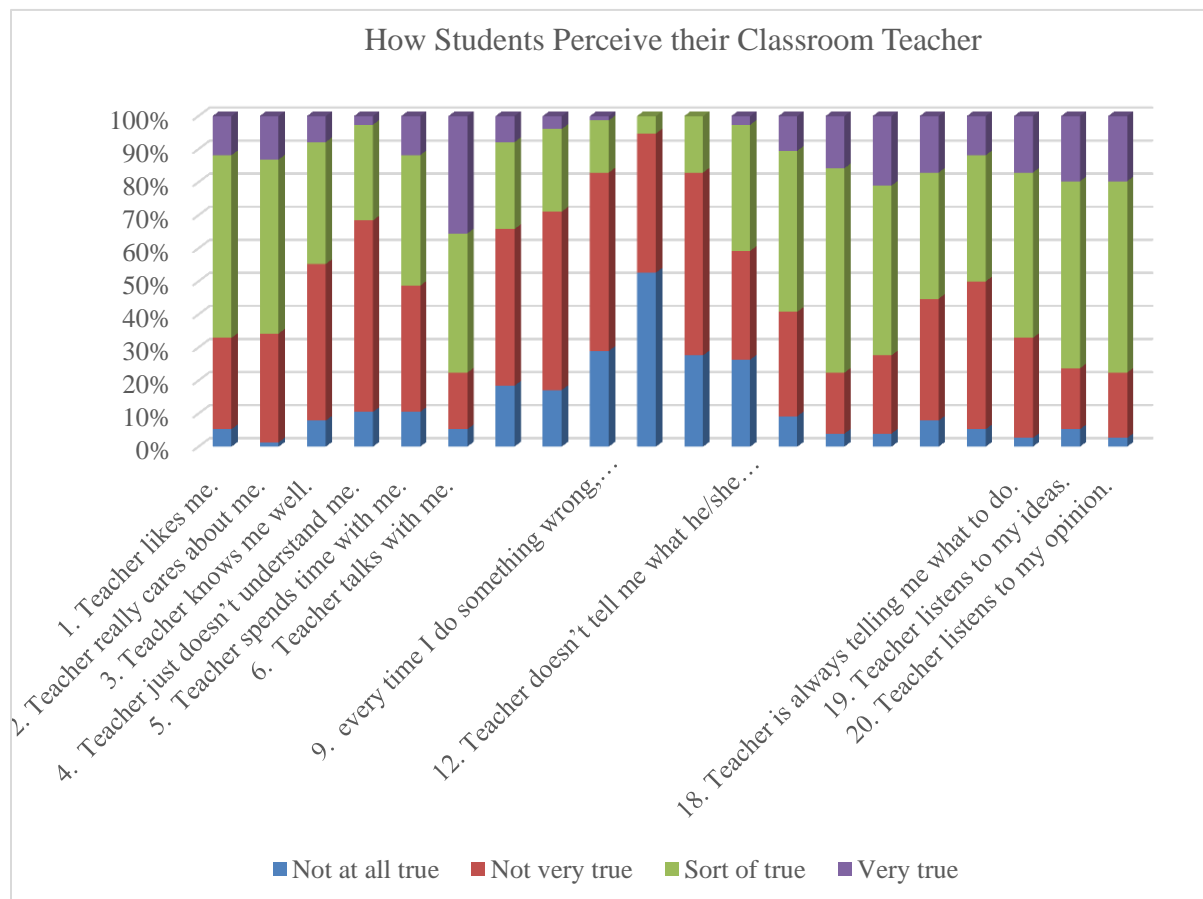
Other researchers' examinations have found similar manifestations of these problems. Sources of language anxiety in the classroom that students seemed to be most concerned about are speaking in front of their peers, fear of being laughed at, embarrassed, or making a fool of oneself (Ocampo, 2016). Students were also very concerned about making errors in

pronunciation, and they in particular wished to develop an accent that approximated that of a native speaker. This is similar to the Japanese students the researcher encountered that were seriously concerned about their pronunciation and grammar. In teaching, as part of changing students' mindsets, the researcher frequently encouraged them with the exhortation that "you are going to make a million mistakes to learn a new language!" (Myers, 2012). She also emphasized the idea that embracing discomfort is part of the journey.

### 3.2 Students perceptions of their teacher

Students were asked to what extent the following were true: The teacher listened to their ideas, opinions, and the teacher checked to see if they were ready before he or she started a new topic. The results indicated that, based on the students' perceptions, the researcher, in the role of EFL teacher, was supporting them in their learning.

In Figure 2 the results indicate that for the EFL learners, the teacher did not appear to change her reaction much when they made mistakes, and always made clear the focus of her expectations of the students in a positive



**Figure 2:** *Students' perceptions of their EFL teacher.*

However, despite positive student perceptions, as in William (2009), 50% of the students also felt that the teacher herself was actually responsible for their anxiety-provoking situation. This finding is underpinned by the author's earlier study of stress in the EFL classroom, in which it was revealed that native English speaking teachers (NEST) more often had stress symptoms completely than non-native English speaking teachers (NNEST), echoing or perhaps even provoking a stress reaction on the part of students (Ocampo & Rockell, 2014). In the same study, numerous other disturbing symptoms were revealed. For example, teachers complained of stomach upset (100% of NEST), experienced periods of confusion and lack of interest in things, had recurrent thoughts about bad experiences, sweated excessively and felt their hearts pounding. In contrast, NNEST (100%) had suffered from forgetfulness and other symptoms. For example, 60% had trouble paying attention and headaches. All NEST reported that they sometimes avoided people completely when they were experiencing stress, had panic attacks and felt nervous around people. 76% of NEST had nightmares and 60% of them had recurrent thoughts of past bad experiences. At the same time all NNEST said that they sometimes lost interest in things, had chest pain, poorly performed in their duty as teachers (74%), and 82% of NNEST even burst into tears at work.

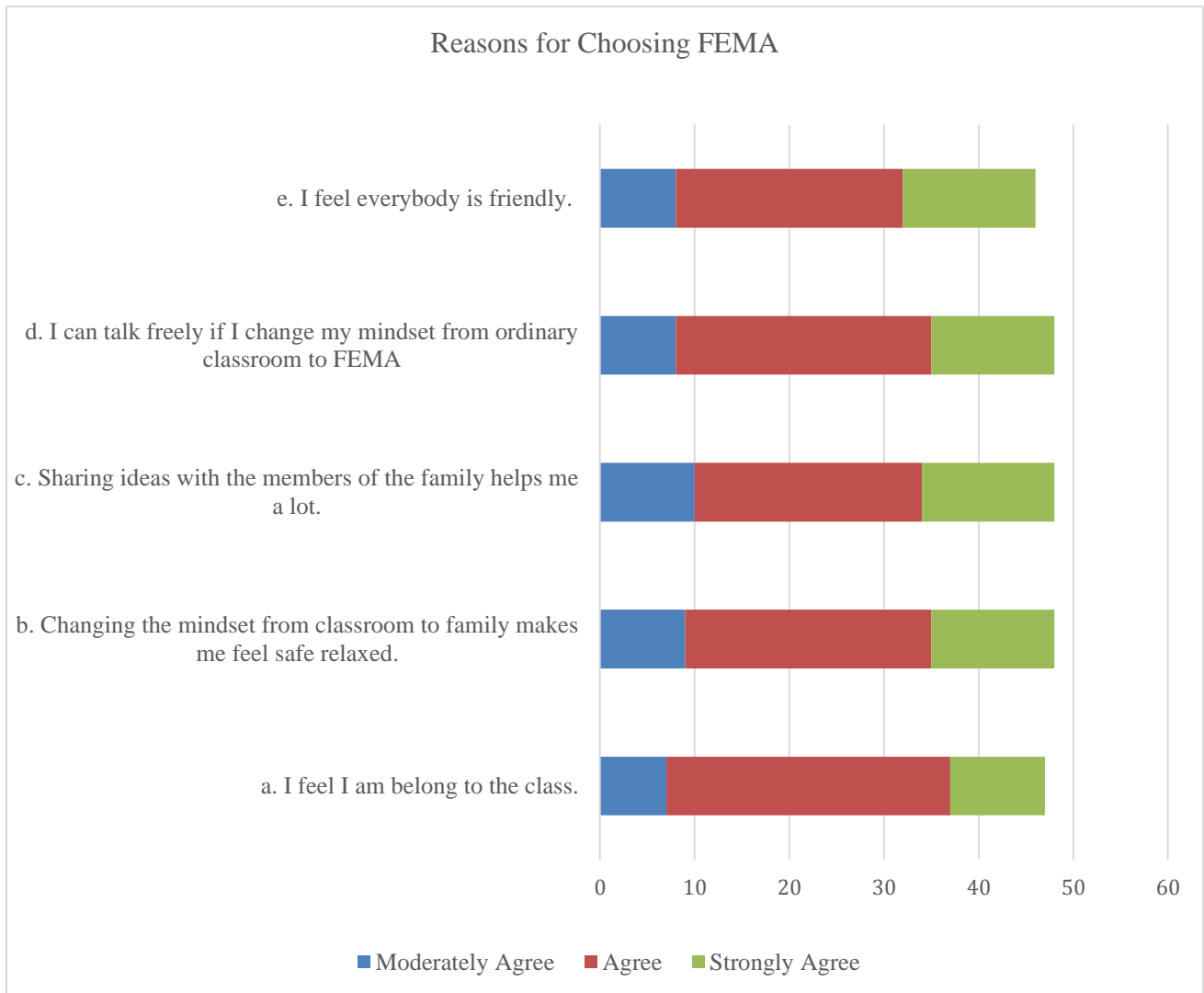
This result, revealing high level of teachers' anxiety suggests that teacher stress can combine with students' fears of negative evaluation in the eyes of the teacher, and may be the main cause of student anxiety. Fears about communication and social evaluation are likely based on a student's relationship with their teachers and peers. However, it has been the researcher's observation that teachers seldom accept the fact that their presence, manner or teaching style can sometimes negatively affect their students' behavior. Some students look upon the classroom as a place where teachers have to implement the rules of learning for the students to follow. Frequently, teachers focus on what they see as their characteristics as a teacher in a classroom, neglecting the additional role they play in creating a limited interpersonal relationship with their students. Thus, the researcher encourages teachers to start changing their mindset too, to play different roles in a classroom: as catalyst, consultant, guide, counselor, and a model for learning. In a traditional family, all of these are the roles of a mother or father. Parents are frequently required to respond calmly and nonjudgmentally, in a supportive manner, and let their children understand their own problems. In the current study, the researcher was very conscientious to



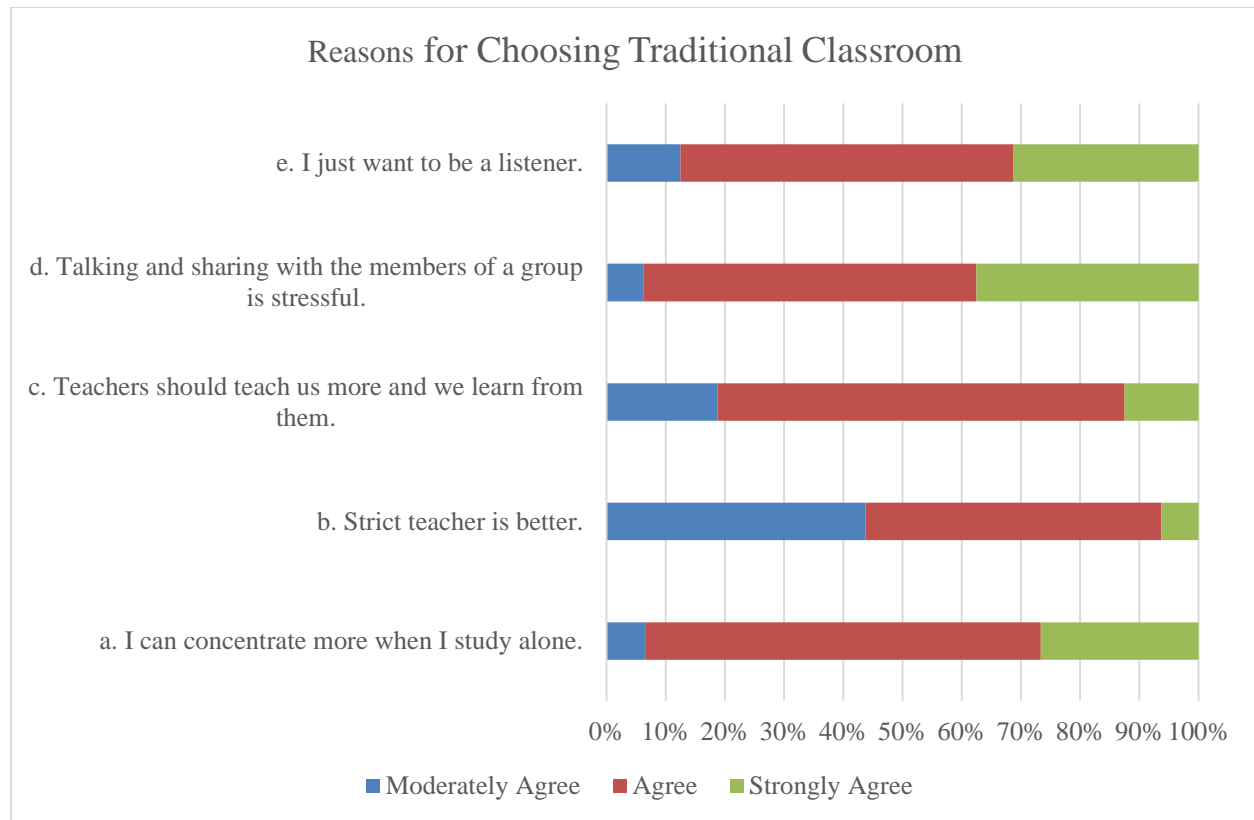
play these roles consistently when dealing with students. As a result, 75% of the students preferred FEMA while only 25% said they preferred a traditional classroom.

### **3.3 Preference for either FEMA or traditional classroom**

Figure 3 shows the reasons why students preferred FEMA. The approach enhanced EFL learners' feeling of belonging to a class. Changing the mindset from a traditional classroom approach to FEMA made them feel relaxed, sharing ideas with their classmates helped them talk freely and everybody in the class was friendly. The reasons why students, in contrast, preferred a traditional classroom environment are listed in Figure 4. These include the idea that talking and sharing with other group members was stressful, that students just wanted to be listeners, and that they felt they could concentrate more when studying alone. This group also believed that a strict teacher is better and capable of teaching them more.



**Figure 3:** Reason for choosing FEMA in the classroom.



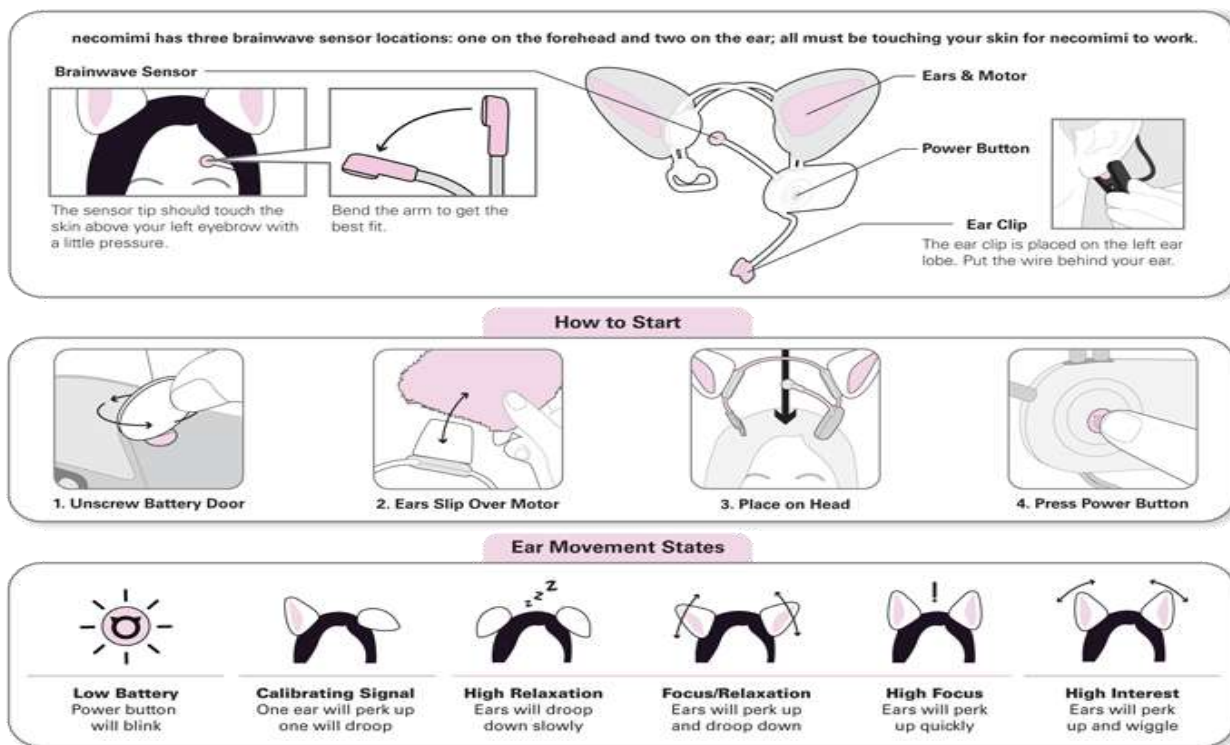
**Figure 4:** Reason for choosing traditional classroom.

A greater number of students (73%) agreed that changing the mindset of students to FEMA can help ease their stress and anxieties while 27% disagreed. However, when asked if they wanted the FEMA approach to be used by other teachers in different subjects, students' opinions were almost equally divided, with 51% agreeing and 49% disagreeing with the idea. This shows that students feel they need more assistance to speak fluently when learning a foreign language. The researcher is encouraged to deepen her research in order to understand why some students did not want to recommend FEMA to teachers of other subjects.

When they were asked to comment freely, students said they felt the class was relaxing, comfortable, enjoyable, fun, and they could speak English freely in the classroom. The teacher and classmates were friendly, and they wanted to continue using FEMA. However, some said FEMA learning is difficult, is good only for those who want to improve their communication skills, and that they do not like the group work that FEMA entails.

### 3.4 FEMA and measuring the brainwaves of emotions

As way of assessing FEMA's effectiveness, the researcher conducted a fun-oriented experiment that checked the brainwaves of emotions of the students when speaking English. The students, who participated voluntarily, were asked to prepare questions for their classmates, ranging from simple questions using 'what,' to more difficult questions using 'why.' Employing this technique, students' emotions were determined by the resultant position of the *Necomimi* worn by the speakers. Depending on the individual student's reaction, as seen in Figure 5, students were either determined to be in a relaxed state (machine's ears drooped down), focused and relaxed (machine's ears stood firmly and wiggle), or relaxed and highly focused (machine's ears stood firmly).



**Figure 5:** Brainwave emotion detector using *Necomimi* technology.

Figure 6 illustrates the extent to which students of the ISC enjoyed the question and answer conversation portions using this machine. Brainwaves of emotions are located in the frontal lobe, which is the most recently evolved part of the brain, managing emotional impulses in socially appropriate ways for productive behaviors including empathy, altruism, and interpretation of facial expressions. The face-to-face seating arrangement used during the

experiment meant that students' emotions were visible to everyone and this encouraged their classmates to ask more questions. This kind of positive result is a case in point of the theory of Wolfe (2001) that an effective classroom climate might be described as a climate that allows students to naturally increase the endorphin, dopamine, norepinephrine, or serotonin levels in their brains, making the students' education experiences more pleasurable and rewarding.

Some photos proved that they are enjoying the company of their brothers and sisters.



**Figure 6:** *EFL Students enjoying FEMA in the classroom wearing Nekomimi, a brainwave emotion detector.*

### **3.5 Selected comments of ISC students**

The following selected students' comments help to illustrate their FEMA experience. Author Full scripts of their complete narrated written comments are available from the author.

*"FEMA is the best way to teach English. Of course, we can use FEMA in other subjects. I wish this could be expanded in other subjects. All professors should adopt FEMA."*

*"FEMA should be used more in English classes because students can speak at ease. Speaking is the most important for Japanese. In other subjects' case, it is up to the students' level because low level students may not take lessons seriously in FEMA. Especially at math class, students*

*need to concentrate into calculation in silent. I think there are few students who can concentrate and speak about something in a small space like kitchen.”*

*“I was surprised because I thought I could not talk and participate in the class because I felt nervous all the time but FEMA moved me. So I think it should be used by other teachers, too.”*

#### **4. Conclusion**

Although FEMA is still in its infancy stage, this original approach to EFL education, recently developed by the researcher (Ocampo, 2016) has been shown, in the context of this initial exploratory study, to have the potential to effectively enhance the mindset of EFL learners to embrace the challenge of growth. This enhanced mindset presented itself in many ways, including students being anxiety and stress-free when facing the challenges of learning a foreign language, not being scared of what other people might say when they make mistakes, and understanding the importance of a fun and stress-free learning experience. The study showed that students gained considerable confidence to speak in spite of the many mistakes they inevitably made. These students accepted the fact that with a growth mindset, approaching failure as a challenge can lead them to prosper. Student appraisal of FEMA was very positive. Based on their narrated comments, they highly recommend FEMA to be used by English teachers and teachers of other subjects. It was revealed that, similar to Community Language Learning, FEMA operates by fostering cooperation rather than competition, and developing critical thinking skills and communicative competence through socially structured interactive activities. As has been emphasized, however, any number of various techniques and approaches are of no use if educators do not bring about a corresponding revolution in students' minds. Directly related to this is the important idea that the author has emphasized in the current study, that in order to reduce learners' anxiety and increase their learning motivation, instructors must deeply consider the influence that the classroom experience will have on their students. In order to battle emotional stress, as well as the physiological and behavioral problems that challenge both teachers and learners, it is vital that educators remain committed to finding innovative strategies that really work. For the Japanese university students examined in this project, the combination of FEMA and *Necomimi* was found to be a highly effective approach and one that offers much potential for further development in future projects.

## 5. Future Research Recommendations

1. In order to gain a better understanding of the way students relate to the use of FEMA a more elaborate research design would be very helpful in future studies.
2. Allowing students to be questioned by students, teachers and other people who do not belong to the class would provide a valuable contrast to the current paper, in which only familiar participants acted as questioners.
3. Pre and post studies examining participants' brainwaves of emotion prior to and post working with FEMA would be an important part of further studies into FEMA.
4. Above all, the researcher highly recommends that ELF teachers fully understand FEMA's significance, in order to support its effective implementation. In this regard, stress coping strategies can help to ease students' anxiety when learning a foreign language (Ocampo & Rockell, 2014).
5. To promote this research in the educational community, it would be most beneficial if special seminars for teachers on the importance of FEMA and Community Language Learning. Disseminating knowledge of FEMA in this way would be a positive step forwards in helping educators to alter the mindset of students and encourage them to embrace failure as challenge to succeed on the journey of learning a foreign language.
6. To evaluate students' brainwaves of emotions deeply using more sophisticated gadget to assess the effectiveness of FEMA.

## References

- Asher, J. J. (1972). Children's first language as a model of second language learning. *Modern Language Journal* 56; Issue 3, 133-139.
- Dornyei, Z. (2008). *The psychology of second language acquisition, learners characteristics and environment*. Oxford University Press, First Edition.
- Doyon, P. (2000). Shyness in the Japanese EFL class. *Language teacher Kyoto-JALT*, 24(1), 11-16.
- Hinenoya, K., & Gathbonton, E. (2000). Ethnocentrism, cultural traits, beliefs, and English proficiency: A Japanese sample. *The modern language journal*, 84(2), 225-240.
- Horwitz, E.K., Horwitz, M.B., & Cope, J. (1986). Preliminary evidence for the reliability and validity of a foreign language anxiety scale. *Tesol Quarterly*, 559-562.

- Keltner, D., & Ekman, P (2000). Emotion: an overview. *Encyclopedia of psychology*, 3, 162-167.
- Kurita, Y. (1994). A study of Japanese students' problems in a communicative ESL classroom: The pedagogical implications for Japanese students. *The CATESOL journal*, 7(2), 57-71.
- Matsumoto, K. (1994). English instruction problems in Japanese schools and higher education. *Journal of Asian pacific communication*, 5(4), 209-214.
- Myers A. (2012). Emotions and language learning. Encouragement, knowledge. *The everyday language learner*. October 31, 2012.
- Necomimi Cat Ears Article. [www. Necomimi.com](http://www.Necomimi.com).
- [http://issuu.com/endeavour1/docs/issue\\_1.2/33?e=4718258%2F13336536](http://issuu.com/endeavour1/docs/issue_1.2/33?e=4718258%2F13336536)
- Ocampo, M. (2016). Family Environment Mode Approach (FEMA): An “anxiety buster” to motivate EFL Learners. *21<sup>st</sup> Century Academic Forum, Third 21<sup>st</sup> CAF Conference*. ISSN: 2330-1236, pp. 263-265.
- Ocampo, M. & Rockell, K. (2014). Perceived stress, burnout and coping strategies of native and non- native English speaking teachers in Japan. *The Asian EFL Journal*, 15-26.
- Rosenberg, E. L., & Fredrickson, B. L. (1998). Overview to special issue: Understanding emotions means crossing boundaries within psychology. *Review of General Psychology*, 2(3), 243.
- William, K. & Andrade, M. (2009). Foreign language learnings anxiety in Japanese EFL university classes: Causes, coping, and locus of control. *Journal of foreign language teaching, Centre for language studies, National University of Singapore*, 5 (2), 181-191.
- Wilson, K. (2012). *Motivating the unmotivated*. Retrieved from <https://www.teachingenglish.org.uk/article/motivating-unmotivated>
- Wolfe P. (2001). Brain Matters. Translating Research into Classroom Practice. Association for Supervisor and Curriculum Development. VA 22311-1714 USA, p 68.