ISBN: 978-1-6654-1354-1

ICSGTEIS

2021 International Conference on Smart-Green Technology in Electrical and Information Systems (ICSGTEIS)

CONFERENCE PROCEEDINGS

Advancing Smart and Green Technologies Toward Society 5.0

28 - 30 October 2021
Bali, Indonesia

Organized by :

Department of Electrical Engineering,
Postgraduate Study in Electrical Engineering
Faculty of Engineering
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TABLE OF CONTENTS

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***Abstract*—The pandemic prevention measure of social distancing makes Indonesia higher Education system undergo a rapid transformation of distance learning. However, the sudden changes also come with its own unique problem The effectiveness of online learning as a medium of study is an old debate among academia. The approach's effectiveness varies from field to field and from one experiment to another. One problem that seems consistent among the research is fluctuating attention among participants. This research explore the potential to use of an ancient Balinese breathing technique known as Dasa Aksara pranayama. This technique that combines the visualization technique and the breathing exercise has existed since the mid-nineteen century and was developed by Balinese monks. This research wants to gather the empirical evidence of the benefit of the technique using EEG monitoring and machine learning. We do a comparative study between the one group which is not receive the dasa aksara meditation treatment and another group which receive one. The end of the result concludes that the breathing technique succeeded to improve the attention level of the participant on average of 22.85% and the software is well received among the participant with the result of usability testing yield average point of 3.65 on a scale of 4.**

Keywords—Dasa Aksara Yoga, Post Pandemic Education, EEG, Brainwave.

I. INTRODUCTION

Base on education decree number 4th 2020 issued by acting education minister Nadiem Makarim Indonesia Higher Education learning is forced to implement a full-fledged online curriculum for the entire year of 2020. However, a sudden transition from offline learning to full online learning in the post-pandemic Indonesia is not coming without problems. The over-reliance on a computer screen in a full-time class in a study conducted by [1], is associated with increased visual fatigue in university students. also the online learning process also put more strain on participant physical and mental states, like what has pointed in this study [2]. The famous research in Slovakia also confirms that the increased time you spent sitting and staring on a computer screen also increases the risk of back pain [3] and increased myopia that will become apparent after only a few months [4]. Not only on the physical states of thing also the effect is apparent on mental of the participant as well as the prolonged duration of computer screen staring is have been found to increase the stress level by 34.9%. From the educator perspective, similar research also conducted in Indonesia [5], which reported the comparison of online and offline learning effectiveness on student above primary level. However, according to study initiated by Bahasoan et all compared to traditional eye to eye learning the online learning effort still found a lot of problem for the student participating in it [6], the result in consistent even when we switch the subject changed across culture [7], not only Massive Open Online Course (MOOC) approach fall behind but also have been shown to be more demanding and put the student in lower attention span compared to offline teaching method [8]. The effort to fix the flaw of online learning has been a popular research object in recent decades, with gamification becoming the favorites approach to tackle this problem was initiated in 1993. This method is revised time and time again from Europe to Asia, this approach does not yet succeed in addressing the decrease attention level that commonly occurs in online/non-eye to eye contact learning [9], [10]. More spiritual approaches are taken by Nour Meidly [11] with the introduction of mantra before the learning session that has been associated by improved attention level but as the report using the subjective measure of attention is hard to replicate and evaluate. In other study Zi Yan and associates also doing similar objective approach but the decision of the research of not using any public data makes the study problematic [12]. To tackle this problem, we use EEG as the data constructor of our research as it has been the industry standard of interpreting the state of mind like what has been proven by Krigolson [13] or a similar study by Arijit Nandi [14] in 2017 and 2020 respectively. We tried to tackle the attention deficit problem and short attention window in online learning with Balinese traditional breathing method known as Dasa Aksara Pranayama [15], the same method already on a pilot study in the medical world to provide a pain reduction in pre endoscopic patient [16] and also used in pain management therapy on adolescent with Rheumatic Archritis (RA) [17]. This breathing method is not yet explored enough to be utilized as a tool in education, is still less explored compared to Indian Pranayama [18], or Qi Gong Chinese Breathing Exercise that has been widely utilized in many subjects of research [19]. Elektroensefalogram (EEG) which is what we

used in this research is an electrophysiology apparatus to record electrical activities along with the scalp. This method is usually a non-invasive one to be placed around the skin, this method is considered versatile enough to be implemented in various research subjects. EEG worked to quantify the signal transmitted by the brain neuron [20].The study will be situated in the small experimental settings with 20 participants which the brainwave data and mental state will be compared before and after doing the dasa aksara exercise . The brainwave would be analyzed using a deep-learning based classifier which has been pre-trained before to distinguish two mental state which confused-state and highly focused state

II. Literatures Review

A. *Dasa Aksara Pranayama*

Dasa Aksara is a branching technique of Yoga that originated in the golden age of Bali, the scripture that contains the instruction of Yoga is the book of Aji Saraswati. The Yoga is deep-rooted from Balinese tantric tradition, which further proven the finding of the Yoga teaching in the Javano-Balinese texts derive, since recent research by Andrea Acri [21] indicates that the technique is more like having Shandika (Dravidian) origin for the technique rather than the non-dualist Kashmiri traditions that are usually associated with the *Kundalini Yoga* described by Padoux and others. Nevertheless, the *Dasa Aksara Yoga*, which has been dubbed 'Alphabet mysticism' by some Western scholars, are evidently grounded in very similar concepts concerning the nature of sound, speech, and the energy of early Sanskrit literature. It makes yoga unique compared to the more mainstream yoga technique from Indian tradition emphasizes doing a visual affirmation during the training, which makes the autofocus mechanism of the brain working more heavily rather than the muscle control or the balance control like other vipassana traditions. The visualization aspect of *Dasa Aksara Yoga* consists of:

TABLE I. Dasa Aksara Yoga

Phase	Components of Dasa Aksara Yoga		
	Balinese Chants	***Alphabet***	***Visualization***
1	Sa	S	Heart
2	Ba	B	Liver
3	Ta	T	Kidney
4	A	A	Bladder
5	I	I	Base Belly
6	Na	N	Lung
7	Ma	M	Scalp / Top of The Head
8	Si	S	Spleen
9	Wa	W	Chest Cavity
10	Ya	Y	Solar Plexus

Which when the breathing technique is performed the participant is on the rhythm of doing a simple breathing exercise consisting of four phase:

- Puraka : Inhalation
- Kumbhaka : Retention of health
- Rechaka : The exhalation of breath
- Shunyata : The focused exhalation air out

B. *Elektroensefalogram (EEG)*

Elektroensefalogram taken from two essential word electro means electrical signal and Fotograf, which mean brain recording or snapshotting.

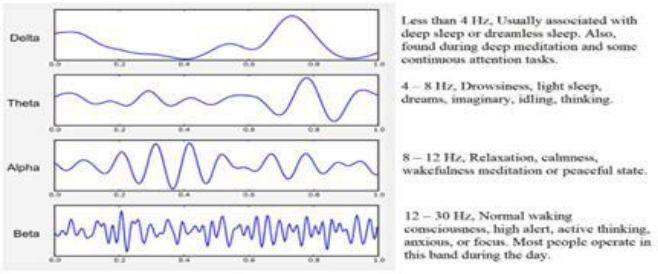

Fig. 1. Different types of Brainwaves

In popular books, EEG is defined as an electrode-powered system that records potential currents around the scalp [22]. EEG is standardly used as an apparatus to detect emotion or any human intention. EEG signal usually consists of AgCl electrode and has been standardized by a standard known as 10-20 standard an EEG device commonly associated with a graph-figure output known as Electroencephalogram. Amplitude and frequency vary from device manufacturer to manufacturer; the result produced by this device is also very dependent on the subject whatever the subject is in a relaxed state or whatever the subject is idle or having activity. A lot of EEG signals then interpreted by the cycle that they produced a wave with 8-14 cycles per second is commonly known as alpha which can be recorded best in the occipital region.

C. *Frequency Band EEG*

Many researchers have successfully linked brain wave patterns with our brain's mental activity. Any EEG-related research usually starts working with raw EEG data and then categorized them into five known frequency labels known as Alpha wave, Beta wave, Delta wave, Theta, and Gamma wave. However, in many devices, only Alpha, Beta, Delta, and Theta are most widely used for EEG signal analysis or any brainwave-related study. It has been known for decades that our brain releases brainwaves when we do tasks for various cognitive functions. Moreover, can be divided again to 5 frequency band mentioned above only. Gamma frequency has been proven to be the predictor of information processing in our internal brain Beta waves, on the other hand primarily generated in the left hemisphere. That correlates to Decision-making, problem-solving, attentiveness. The increase of Beta brain activity correlates with higher energy consumption too. Alpha waves are quiet and opposite and have been known to be a biomarker or relaxed state of mind. Moreover, primarily generated in the brain's right hemisphere and has been associated with the production of hormones that decrease pain and cognitive stress. These frequency bands will be used as an indicator

when examining the student brainwave and to be a basis of concern when measuring the effectiveness of the procedures that we propose in this research.

III. METHOD

A. *Designing of The System*

The design process of *Dasa Aksara* software is shown in the figure below:

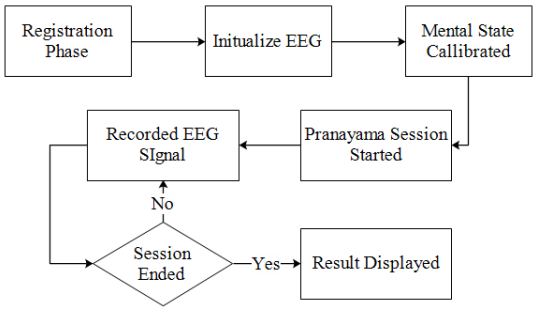

Fig. 2. Dasa Aksara Training Software Context Diagram

The software is initiated and you will asked to put your credential that will linked to the folder where your recording session result is stored and after that and will automatically checking if there is any EEG compatible device detected in the system if the device is detected our internal mental state recognition programs will start working and detecting your current mental state and will recommend the session interval depends on your predicted state and then our pranayama guidance voiceover will be started and your brainwave will start to be recorded and the system will display the diagram regarding your training result or any data that recorded before in display result page. Regarding the recognition system that we use is designed and developed per this specification in diagram shown below.

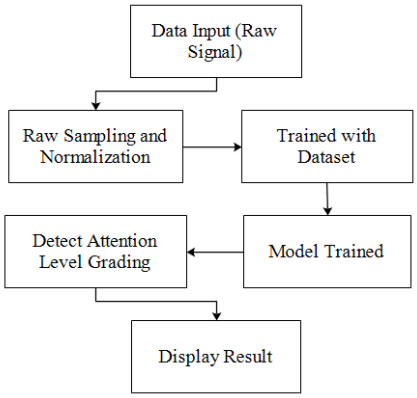

Fig. 3. Focus Recognition System Trained in The Dasa Aksara System

The process started when the device input takes the data is then feed straightforwardly to the preprocessing module when the data is trimmed using Min-Max normalization algorithm, and then the data is compared to the dataset and be trained to be fixated in a model for later use. This model will recognize two states in general, an unfocused state and a focused state. The model is then stored in an internal database for later use. Once the participant is using the program, the classifier will record and predict the participant's mental state at any given time, the participant will give it a scale and put it into a plotter when the plotter will put the output into the graph that the user or expert can interpret.

Fig. 4. Neurosky Mindwave Used by Student

In this research we use cheap and affordable single band commercial EEG device from Neurosky as a objective apparatus that help evaluate the brainwave quality and improvement of the participant thus eliminating the need of self-assessment of attention level for each participant.

IV. RESULT AND DISCUSSION

A. *Result*

The result of the development is a guided self-breathing exercise programme is started with a login page which the participant can then use their username to enter the game. The entrance of the game is shown below.

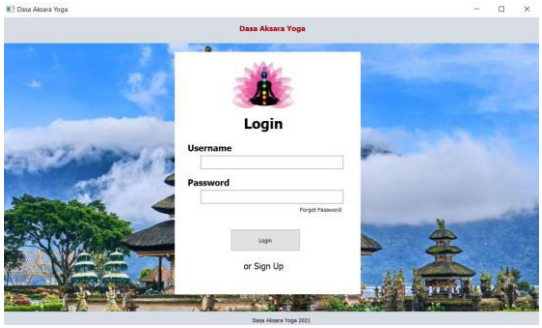

Fig. 5. Welcome Page of The System

The registered participant that have given credential thus having the access for both username and password and the credential clicked and validated by the system, meanwhile if the user is not registered they can click the registration link.

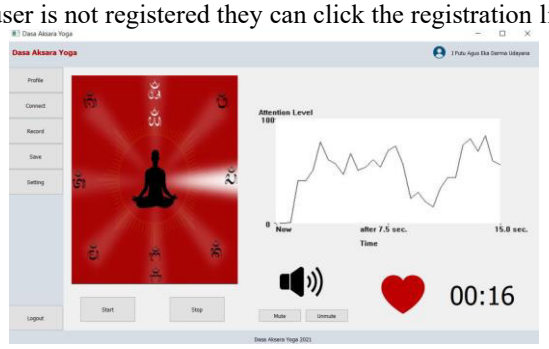

Fig. 6. Guided Dasa-aksara Training and Brainwave

Next you would be arrived at the main menu page which consist of "profile" which the user can see their profile and saved email address for data exporting. Second is a menu connect which user can check the connection of the device which as we mentioned above in need of registered EEG connection. Record when the functionality

of recording the data is triggered which will allow the system to record the real time brainwave data of the participant. “Save” the menu is when the EEG report provided by the system is delivered as text file. Setting is when the user decided the path file of the exported file and the length of guided meditation exercise. The main feature of the system is the guided meditation which composed of *Dasa Aksara* yoga breathing exercise which will be guided thru 2 phases of information provided either from sound and illustration of the visualization. Which would be highlighted as the process thru by the highlighter part of the system and then the right part of the system which contain the report and progress of the participant attention level which a user can be supervised also freely.

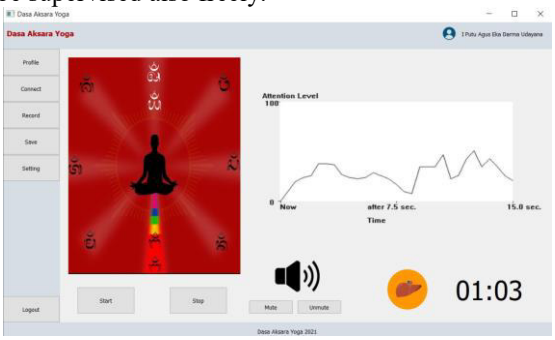

Fig. 7. Visualization Instruction and Guided Instruction

Table 2 is composed of the research result where the participant level of attention is compared side by side to the system administered.

TABLE II. RESULT OF INCREASE ATTENTION LEVEL

Person	Without Dasa Aksara		With Dasa Aksara		*Increase Attention Level(%)*
	Gamma Wave	*Attention Level*	*Gamma Wave*	*Attention Level*	
1	33228	56	43000	65	16.07
2	5293	40	18000	47	17.50
3	57243	47	62000	54	14.89
4	49960	47	58000	53	12.77
5	44790	47	57000	53	12.77
6	33782	44	60000	53	20.45
7	62938	44	67000	53	20.45
8	3266	43	9000	55	27.91
9	73756	40	88000	50	25.00
10	88000	43	93000	55	27.91
11	32551	47	57000	55	17.02
12	46799	51	62000	62	21.57
13	74875	53	82000	62	16.98
14	69203	48	77000	67	39.58
15	41013	45	58000	65	44.44
16	47860	55	62000	66	20.00
17	41013	57	67000	66	15.79
18	60378	54	68745	67	24.07
19	18901	57	32750	77	35.09
20	31559	60	37400	76	26.67
Average	45820.40	48.90	57944.75	60.05	22.85

In this table we can see that the increase of the attention level varies from participant to participant but one thing is consistent in this figure which the trend upwards both in gamma wave of the participant (which according to many consensus always correlates with the state of focus) but in average the participant when doing the *Dasa Aksara* pranayama regime before the online learning started and evaluated via single band EEG device.

B. Usability Testing

Usability testing in this study was conducted to measure how easy it is to use the interface of the system created. This test is done by giving several tasks or tasks to the user to interact with the tested system. This task was given to 20 respondents from STMIK STIKOM Indonesia students. After the user completes all the existing functions, the user then fills out the questionnaire distributed based on his experience when performing the task or tasks earlier. Each question in usability testing has represented every aspect described by Nielsen's Approach, where the parts are learnability, efficiency, memorability, errors, and satisfaction. Table 3 is the test results from usability testing:

TABLE III. THE RESULT OF USABILITY TESTING

No	Scoring Criteria	Average Score
1	*System Aspect (System)*	3.59
2	*User Aspect (User)*	3.73
3	*Aspects of Interaction (Interaction)*	3.63

Table 3 shows the value of user acceptance or user satisfaction on each aspect of the assessment on usability testing. It can be seen that all the attributes contained in the usability testing test have a satisfaction value above 3.00 and the average value of the usability testing test is 3.65 or in other words the results of user satisfaction with the applications offered are already at a satisfactory level.

C. Discussion

Limited test result on this little research shows the capacity of Dasa Aksara Pranayama to be treated as a breathing exercise to improve student attention level of distance learning participants in STIMIK STIKOM Indonesia. Namely, the training increases the gamma waves quality in the participant and would be beneficial to be done before doing lessons. The 20 participants are doing the small test run we provided, reported a increase of focus after the session and with average of 22,85% after the session. The traditional methodology of the waterfall method is also found to be adequate to digitize Bali's cultural heritage since it is in the line of transformation ideas. Turns out for only providing small input namely sound and guided visualization with a little usability testing is also known that participant is having no difficulty doing the session with guided software . The addition of EEG as a countermeasure of participant subjectiveness and also as a real-time benchmark of the training is considered a novelty in Balinese youngsters, thus making the preservation of the Dasa Aksara pranayama

knowledge can be much easier to be scaled after the participant is put into sort of pseudo-competition during the session. This research's ultimate goal is to find a medium of traditional Balinese heritage for the Balinese younger generation which should be preserved in whatever measures necessary because of its necessity to be relevant to Balinese people in the digital era.

V. Conclusion

To overcome modern problems in the post-pandemic era of education in Bali, it turns out that ancient Balinese art can still be relevant. This ancient heritage and sport, when digitized into the form of Information and Communication Technologies (ICT) and combined with modern technology (EEG), proves to be something that appeals to young Balinese. Evidently, from the 20 participants who signed up to be included in the testing session, all participants experienced a 22.85% increase in the level of attention they felt. From the user's point of view, this application is felt wholeheartedly, with the results of usability testing producing an average score of 3.65 on a scale of 4.

Acknowledgment

The author would like to thank the STMIK STIKOM Indonesia form permission given to conduct the study and financial help provided for the doctoral study at Study Program of Engineering Science, Faculty of Engineering, Udayana University. The authors also thank the chairman of Study Program Engineering Science and the staff for the support and motivation given so that this paper can be presented in the conference.

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Submission date: 11-Jan-2022 09:12AM (UTC+0700)
Submission ID: 1739882685
File name: ICSGTESI_2021_after_convert_IEEE_PDF_eXpress.pdf (395.9K)
Word count: 3826
Character count: 19801

ISBN: 978-1-6654-1355-8 Bali, 28 - 30 October 2021 ICSGTEIS 2021

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Keywords*—Dasa Aksara Yoga, Post Pandemic Education, EEG, Brainwave.

I. INTRODUCTION

Base on education decree number 4th 2020 issued by acting education minister Nadiem Makarim Indonesia Higher Education learning is forced to implement a full-fledged online curriculum for the entire year of 2020. However, a sudden transition from offline learning to full online learning in the post-pandemic Indonesia is not coming without problems. The over-reliance on a computer screen in a full-time class in a study conducted by [1], is associated with increased visual fatigue in university students. also the online learning process also put more strain on participant physical and mental states, like what has pointed in this study [2]. The famous research in Slovakia also confirms that the increased time you spent sitting and staring on a computer screen also increases the risk of back pain [3] and increased myopia that will become apparent after only a few months [4]. Not only on the physical states of thing also the effect is apparent on mental of the participant as well as the prolonged duration of computer screen staring is have been found to increase the stress level by 34.9%. From the educator perspective, similar research also conducted in Indonesia [5], which reported the comparison of online and offline learning effectiveness on student above primary level. However, according to study initiated by Bahasoan et all compared to traditional eye to eye learning the online learning effort still found a lot of problem for the student participating in it [6], the result in consistent even when we switch the subject changed across culture [7], not only Massive Open Online Course (MOOC) approach fall behind but also have been shown to be more demanding and put the student in lower attention span compared to offline teaching method [8]. The effort to fix the flaw of online learning has been a popular research object in recent decades, with gamification becoming the favorites approach to tackle this problem was initiated in 1993. This method is revised time and time again from Europe to Asia, this approach does not yet succeed in addressing the decrease attention level that commonly occurs in online/non-eye to eye contact learning [9], [10]. More spiritual approaches are taken by Nour Meidly [11] with the introduction of mantra before the learning session that has been associated by improved attention level but as the report using the subjective measure of attention is hard to replicate and evaluate. In other study Zi Yan and associates also doing similar objective approach but the decision of the research of not using any public data makes the study problematic [12]. To tackle this problem, we use EEG as the data constructor of our research as it has been the industry standard of interpreting the state of mind like what has been proven by Krigolson [13] or a similar study by Arijit Nandi [14] in 2017 and 2020 respectively. We tried to tackle the attention deficit problem and short attention window in online learning with Balinese traditional breathing method known as Dasa Aksara Pranayama [15], the same method already on a pilot study in the medical world to provide a pain reduction in pre endoscopic patient [16] and also used in pain management therapy on adolescent with Rheumatic Archritis (RA) [17]. This breathing method is not yet explored enough to be utilized as a tool in education, is still less explored compared to Indian Pranayama [18], or Qi Gong Chinese Breathing Exercise that has been widely utilized in many subjects of research [19]. Elektroensefalogram (EEG) which is what we

used in this research is an electrophysiology apparatus to record electrical activities along with the scalp. This method is usually a non-invasive one to be placed around the skin, this method is considered versatile enough to be implemented in various research subjects. EEG worked to quantify the signal transmitted by the brain neuron [20].The study will be situated in the small experimental settings with 20 participants which the brainwave data and mental state will be compared before and after doing the dasa aksara exercise . The brainwave would be analyzed using a deep-learning based classifier which has been pre-trained before to distinguish two mental state which confused-state and highly focused state

II. Literatures Review

A. Dasa Aksara Pranayama

Dasa Aksara is a branching technique of Yoga that originated in the golden age of Bali, the scripture that contains the instruction of Yoga is the book of Aji Saraswati. The Yoga is deep-rooted from Balinese tantric tradition, which further proven the finding of the Yoga teaching in the Javano-Balinese texts derive, since recent research by Andrea Acri [21] indicates that the technique is more likely having Shandika (Dravidian) origin for the technique rather than the non-dualist Kashmiri traditions that are usually associated with the *Kundalini Yoga* described by Padoux and others. Nevertheless, the *Dasa Aksara Yoga*, which has been dubbed 'Alphabet mysticism' by some Western scholars, are evidently grounded in very similar concepts concerning the nature of sound, speech, and the energy of early Sanskrit literature. It makes yoga unique compared to the more mainstream yoga technique from Indian tradition emphasizes doing a visual affirmation during the training, which makes the autofocus mechanism of the brain working more heavily rather than the muscle control or the balance control like other vipassana traditions. The visualization aspect of *Dasa Aksara Yoga* consists of:

TABLE I. Dasa Aksara Yoga

Phase	Components of Dasa Aksara Yoga		
	Balinese Chants	***Alphabet***	***Visualization***
1	Sa	S	Heart
2	Ba	B	Liver
3	Ta	T	Kidney
4	A	A	Bladder
5	I	I	Base Belly
6	Na	N	Lung
7	Ma	M	Scalp / Top of The Head
8	Si	S	Spleen
9	Wa	W	Chest Cavity
10	Ya	Y	Solar Plexus

Which when the breathing technique is performed the participant is on the rhythm of doing a simple breathing exercise consisting of four phase:

- Puraka : Inhalation
- Kumbhaka : Retention of health
- Rechaka : The exhalation of breath
- Shunyata : The focused exhalation air out

B. Elektroensefalogram (EEG)

Elektroensefalogram taken from two essential word electro means electrical signal and Fotograf, which mean brain recording or snapshotting.

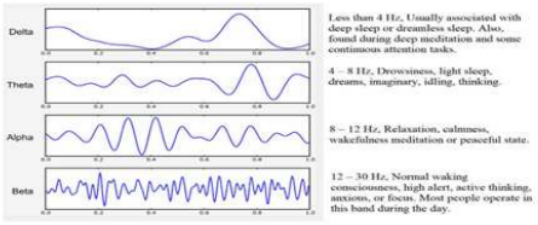

Fig. 1. Different types of Brainwaves

In popular books, EEG is defined as an electrode-powered system that records potential currents around the scalp [22]. EEG is standardly used as an apparatus to detect emotion or any human intention. EEG signal usually consists of AgCl electrode and has been standardized by a standard known as 10-20 standard an EEG device commonly associated with a graph-figure output known as Electroencephalogram. Amplitude and frequency vary from device manufacturer to manufacturer; the result produced by this device is also very dependent on the subject whatever the subject is in a relaxed state or whatever the subject is idle or having activity. A lot of EEG signals then interpreted by the cycle that they produced a wave with 8-14 cycles per second is commonly known as alpha which can be recorded best in the occipital region.

C. Frequency Band EEG

Many researchers have successfully linked brain wave patterns with our brain's mental activity. Any EEG-related research usually starts working with raw EEG data and then categorized them into five known frequency labels known as Alpha wave, Beta wave, Delta wave, Theta, and Gamma wave. However, in many devices, only Alpha, Beta, Delta, and Theta are most widely used for EEG signal analysis or any brainwave-related study. It has been known for decades that our brain releases brainwaves when we do tasks for various cognitive functions. Moreover, can be divided again to 5 frequency band mentioned above only. Gamma frequency has been proven to be the predictor of information processing in our internal brain Beta waves, on the other hand primarily generated in the left hemisphere. That correlates to Decision-making, problem-solving, attentiveness. The increase of Beta brain activity correlates with higher energy consumption too. Alpha waves are quiet and opposite and have been known to be a biomarker or relaxed state of mind. Moreover, primarily generated in the brain's right hemisphere and has been associated with the production of hormones that decrease pain and cognitive stress. These frequency bands will be used as an indicator

when examining the student brainwave and to be a basis of concern when measuring the effectiveness of the procedures that we propose in this research.

III. METHOD

A. Designing of The System

The design process of *Dasa Aksara* software is shown in the figure below:

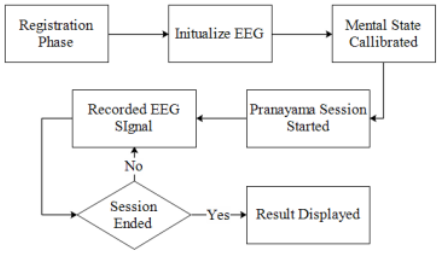

Fig. 2. Dasa Aksara Training Software Context Diagram

The software is initiated and you will asked to put your credential that will linked to the folder where your recording session result is stored and after that and will automatically checking if there is any EEG compatible device detected in the system if the device is detected our internal mental state recognition programs will start working and detecting your current mental state and will recommend the session interval depends on your predicted state and then our pranayama guidance voiceover will be started and your brainwave will start to be recorded and the system will display the diagram regarding your training result or any data that recorded before in display result page. Regarding the recognition system that we use is designed and developed per this specification in diagram shown below.

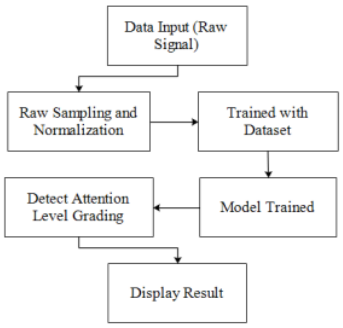

Fig. 3. Focus Recognition System Trained in The Dasa Aksara System

The process started when the device input takes the data is then feed straightforwardly to the preprocessing module when the data is trimmed using Min-Max normalization algorithm, and then the data is compared to the dataset and be trained to be fixated in a model for later use. This model will recognize two states in general, an unfocused state and a focused state. The model is then stored in an internal database for later use. Once the participant is using the program, the classifier will record and predict the participant's mental state at any given time, the participant will give it a scale and put it into a plotter when the plotter will put the output into the graph that the user or expert can interpret.

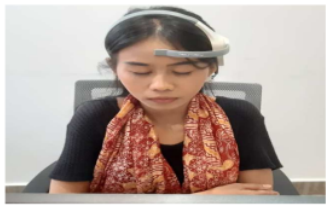

Fig. 4. Neurosky Mindwave Used by Student

In this research we use cheap and affordable single band commercial EEG device from Neurosky as a objective apparatus that help evaluate the brainwave quality and improvement of the participant thus eliminating the need of self-assessment of attention level for each participant.

IV. RESULT AND DISCUSSION

A. Result

The result of the development is a guided self-breathing exercise programme is started with a login page which the participant can then use their username to enter the game. The entrance of the game is shown below.

Fig. 5. Welcome Page of The System

The registered participant that have given credential thus having the access for both username and password and the credential clicked and validated by the system, meanwhile if the user is not registered they can click the registration link.

Fig. 6. Guided Dasa-aksara Training and Brainwave

Next you would be arrived at the main menu page which consist of "profile" which the user can see their profile and saved email address for data exporting. Second is a menu connect which user can check the connection of the device which as we mentioned above in need of registered EEG connection. Record when the functionality

of recording the data is triggered which will allow the system to record the real time brainwave data of the participant. “Save” the menu is when the EEG report provided by the system is delivered as text file. Setting is when the user decided the path file of the exported file and the length of guided meditation exercise. The main feature of the system is the guided meditation which composed of *Dasa Aksara* yoga breathing exercise which will be guided thru 2 phases of information provided either from sound and illustration of the visualization. Which would be highlighted as the process thru by the highlighter part of the system and then the right part of the system which contain the report and progress of the participant attention level which a user can be supervised also freely.

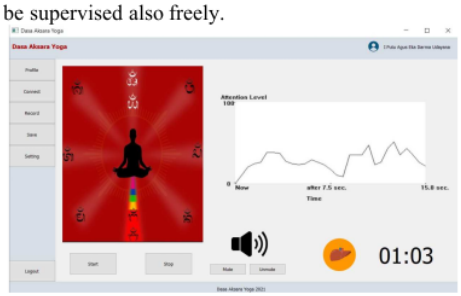

Fig. 7. Visualization Instruction and Guided Instruction

Table 2 is composed of the research result where the participant level of attention is compared side by side to the system administered.

TABLE II. RESULT OF INCREASE ATTENTION LEVEL

Person	Without Dasa Aksara		With Dasa Aksara		*Increase Attention Level(%)*
	Gamma Wave	*Attention Level*	*Gamma Wave*	*Attention Level*	
1	33228	56	43000	65	16.07
2	5293	40	18000	47	17.50
3	57243	47	62000	54	14.89
4	49960	47	58000	53	12.77
5	44790	47	57000	53	12.77
6	33782	44	60000	53	20.45
7	62938	44	67000	53	20.45
8	3266	43	9000	55	27.91
9	73756	40	88000	50	25.00
10	88000	43	93000	55	27.91
11	32551	47	57000	55	17.02
12	46799	51	62000	62	21.57
13	74875	53	82000	62	16.98
14	69203	48	77000	67	39.58
15	41013	45	58000	65	44.44
16	47860	55	62000	66	20.00
17	41013	57	67000	66	15.79
18	60378	54	68745	67	24.07
19	18901	57	32750	77	35.09
20	31559	60	37400	76	26.67
Average	45820.40	48.90	57944.75	60.05	22.85

In this table we can see that the increase of the attention level varies from participant to participant but one thing is consistent in this figure which the trend upwards both in gamma wave of the participant (which according to many consensus always correlates with the state of focus) but in average the participant when doing the *Dasa Aksara* pranayama regime before the online learning started and evaluated via single band EEG device.

B. Usability Testing

Usability testing in this study was conducted to measure how easy it is to use the interface of the system created. This test is done by giving several tasks or tasks to the user to interact with the tested system. This task was given to 20 respondents from STMIK STIKOM Indonesia students. After the user completes all the existing functions, the user then fills out the questionnaire distributed based on his experience when performing the task or tasks earlier. Each question in usability testing has represented every aspect described by Nielsen's Approach, where the parts are learnability, efficiency, memorability, errors, and satisfaction. Table 3 is the test results from usability testing:

TABLE III. THE RESULT OF USABILITY TESTING

No	Scoring Criteria	Average Score
1	*System Aspect (System)*	3.59
2	*User Aspect (User)*	3.73
3	*Aspects of Interaction (Interaction)*	3.63

Table 3 shows the value of user acceptance or user satisfaction on each aspect of the assessment on usability testing. It can be seen that all the attributes contained in the usability testing test have a satisfaction value above 3.00 and the average value of the usability testing test is 3.65 or in other words the results of user satisfaction with the applications offered are already at a satisfactory level.

C. Discussion

Limited test result on this little research shows the capacity of Dasa Aksara Pranayama to be treated as a breathing exercise to improve student attention level of distance learning participants in STIMIK STIKOM Indonesia. Namely, the training increases the gamma waves quality in the participant and would be beneficial to be done before doing lessons. The 20 participants are doing the small test run we provided, reported a increase of focus after the session and with average of 22,85% after the session. The traditional methodology of the waterfall method is also found to be adequate to digitize Bali's cultural heritage since it is in the line of transformation ideas. Turns out for only providing small input namely sound and guided visualization with a little usability testing is also known that participant is having no difficulty doing the session with guided software . The addition of EEG as a countermeasure of participant subjectiveness and also as a real-time benchmark of the training is considered a novelty in Balinese youngsters, thus making the preservation of the Dasa Aksara pranayama

knowledge can be much easier to be scaled after the participant is put into sort of pseudo-competition during the session. This research's ultimate goal is to find a medium of traditional Balinese heritage for the Balinese younger generation which should be preserved in whatever measures necessary because of its necessity to be relevant to Balinese people in the digital era.

V. Conclusion

To overcome modern problems in the post-pandemic era of education in Bali, it turns out that ancient Balinese art can still be relevant. This ancient heritage and sport, when digitized into the form of Information and Communication Technologies (ICT) and combined with modern technology (EEG), proves to be something that appeals to young Balinese. Evidently, from the 20 participants who signed up to be included in the testing session, all participants experienced a 22.85% increase in the level of attention they felt. From the user's point of view, this application is felt wholeheartedly, with the results of usability testing producing an average score of 3.65 on a scale of 4.

Acknowledgment

The author would like to thank the STMIK STIKOM Indonesia form permission given to conduct the study and financial help provided for the doctoral study at Study Program of Engineering Science, Faculty of Engineering, Udayana University. The authors also thank the chairman of Study Program Engineering Science and the staff for the support and motivation given so that this paper can be presented in the conference.

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