1st UPY International Conference on Applied Science and Education (1st UP-INCASE) and 5th International Conference on Education for Sustainable Development 2018

PROGRAM BOOK

Integrated STEM
(Science, Technology, Engineering and Mathematics)
for Future Education

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Jogja Rich Hotel, Yogyakarta, Indonesia

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PREFACE

Dear distinguished Authors and Guests,

The organizing committee warmly welcome you to 1st UPY International Conference on Applied Science and Education (UPINCASE) and 5th International Conference and Sustainable Development (ICESDev), held on October 24-26, 2018, Yogyakarta, Indonesia.

On behalf of 1st UPINCASE and 5th ICESDev, we would like to thank all the authors that contributed to this conference. We would like to extend our special gratitude to the Keynote Speakers who support this conference.

1. Prof. Jasper L. Pastrano from Iloilo Science and Technology University, Philippines
2. Prof. Allan Leslie White from University of Western Sydney, Australia
3. Prof. Cathy S. Lin from National University of Kaohsiung, Taiwan
4. Prof. Datuk Mohd Noh Dalimin from Universiti Tun Hussein Onn, Malaysia
5. Prof. Prapto Yudono from Universitas Gadjah Mada, Yogyakarta, Indonesia
6. Prof. Buchory MS from Universitas PGRI Yogyakarta, Yogyakarta, Indonesia

Universitas PGRI Yogyakarta (UPY), Indonesia with Iloilo Science and Technology University (ISAT-U), Philippines, together with SEAMEO Qitep in Math and Indonesian Lecturers Association (ADRI) are willing to held a kind of conference to provide researchers, scientists, engineers and scholar students for presenting paper in the fields of I***ntegrated STEM (Science, Technology, Engineering and Mathematics) for Future Education.***

After the peer review process, the submitted papers were selected on the basis of originality, significance and clarity for the purpose of the conference. We hope that the conference results constituted significant contribution to the knowledge in these up to date scientific field.

The topics covered in this conference include Technology for Education, Science and Science Education, Mathematics and Mathematics Education.

We will be committed ourselves to make this conference more and more professional with fully and enjoyable academic research and discussion platform for authors and attendees. Sincerely as always, we look forward to your attention and support to the next UPINCASE and ICESDev.

With our warmest regards,
Marti Widya Sari

Conference Chair
October 24, 2018, Yogyakarta, Indonesia

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With our warmest regards,
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Conference Chair
October 24, 2018
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MC:
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Moderator:

No	Keynote Session	Moderator
1	Keynote Speaker 1, Prof Jasper Pastrano	Rizki Nurmaya Oktarina, M.Si (Seameo)
2	Keynote Speaker 2, Prof Cathy S. Lin	Passtitta Ayu Laksmiwati, M.Pd (Seameo)
3	Keynote Speaker 3, Prof Prapto Yudono	Andi Dian Rahmawan, MA (UPY)
4	Keynote Speaker 4, Prof Allan White	Dr. Wahyudi (Direktur SEAMEO)
5	Keynote Speaker 5, Prof M. Nuh Dalimin	Adityarini Aqidah Absahi Djadir (Seameo)
6	Keynote Speaker 6, Prof Buchory MS	Rudha Widagsa, MA (UPY)

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Technology In Traditional Material: SAVI In Tembang Dolanan

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Abstract. The purpose of this research is to develop teaching material of SAVI approach on Play song "tembang dolanan" material for elementary school students in Madiun residency. This development research refers to the 4-D method. The research instrument used is the validation sheet, questionnaire, and students singing (nembang) test. The Data collection techniques were validation and observation. Data were analyzed descriptively qualitative. The results showed that: (1) the process of developing teaching materials SAVI approach on the material tembang dolanan for fourth graders of an elementary school in the Residency Madiun consists of three stages. The stage is the stage of definition, stage of design stage, and stage of development; (2) student textbooks SAVI approach on materials "tembang dolanan" for fourth graders of elementary school in Madiun Residency reliability level is very high, that is 89.7%; And (3) based on the calculation, the t count is 7.31, while the t table is 3.56. Because t count > t table then H1 accepted. It is stated that the teaching materials SAVI approach on the material "tembang dolanan" for fourth-grade elementary school in Madiun Residency was effectively used.

1. Introduction

Character and character education is no longer a novelty plus the emergence of a competency-based curriculum (KBK) in 2001, accompanied by Guidelines for the Development of Cultural Education and the National Character of Balitbang Puskur Depdiknas. From the guidebook, it is expected that all subject areas/subjects can be to galvanize the culture and character of the nation. But in reality, not all items can teach the culture and nature of the country. Reflecting on the lack of clarity in the application of character education, there must be a new method.

The SAVI approach is a learning approach that combines physical movement with intellectual activity and the use of all the senses. In other words, this approach emphasizes that all students have potential and talent and creativity. The potential in students must be trained and developed. To train and develop student potential, students must experience their own learning activities, undertake or demonstrate the meaning of the learning activity, and use their thinking skills to take action.

According to [1], learning can take place effectively as well as attractively if learning can involve all elements of SAVI (Somatic, Auditory, Visual, Intellectual) Somatic is learning by doing motion and deeds Auditory is learning by speaking and listening. learning by observing and describing and intellectual is learning by solving problems and reflecting. In other words, the SAVI approach will benefit in learning activities when the four elements of SAVI exist in a learning event [2].

Based on the observations and the facts, as well as the results of interviews with teachers concerned, so far the learning of tembang dolanan in the subjects of the language of the Region especially Java language is still very minimal. In addition to less well-conceived material, the lack of media is also an obstacle. In learning in the classroom, the classroom teacher taught only classical tape material

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without any media. Even the simple media, for instance, manila or cardboard was not exist, the teacher only writes the lyric or tembang (songs) text on the blackboard, then the teacher gives an example by singing just one song to be taught, then classically, the teacher tells the students to repeat and lastly held a thorough test [3].

The learning of school through the SAVI approach in schools is expected to help the students to recognize themselves and their environment, to apply in their cultural manners, to appreciate the potential of their people, to be able to express ideas and feelings, to participate in society, and to discover and use their analytical and imaginative abilities .

Based on the above description, this paper pursues to teach the character through teaching materials SAVI approach especially on the material tembang dolanan. The SAVI approach fits the material of the dolanan tembang because in the dolanan song, the students are invited to move (Somatik) mimic the movement that is in the lyrics of the dolanan song, then redevelop the dolanan tune that is heard (Audio) and seen (Visual) through VCD, and last search (Intellectual) messages contained in the lyrics of the dolanan song. In each step there is a character education that can be inserted or taught to the students. In addition, to help teachers in improving fun and exciting learning atmosphere[4],[5],[6].

2. Literature and Methods

2.1. Character Education

Character education is basically character education by inculcating moral values to students. These moral values become the norm or rule of religion, law, moral, and custom in society. The character has a positive behavior that can be in the form of deeds, words, feelings, attitudes, and personality. With such high identity, it reminds us of Ki Hadjar Dewantara's teachings in the 1930's about the great step. Ki Hadjar Dewantara explained that the great step consists of adicipta (creation),adikarsa (intention), adirasa(feeling), and adiraga(body). From the four elements, the 'whole human' can be measured, such as in the current ESQ test which is rampant [7].

Character education aims to (1) support the habits and behavior of students who are praised and in tune with the universal values and religious traditions of the nation, (2) inculcate the soul of the leader and the attitude of responsibility as the next generation, (3) , strong and resilient, so as not to lapse into individual and social crimes, and (4) to increase the willpower to avoid disgraceful qualities that can harm others, others, or the environment.

The function of character education is (1) development, that is to increase the commendable acts on the students, (2) channeling, ie petrified students with certain talents in order to develop and useful optimally in harmony with the nation's culture, (3) improvement, lack of student behavior every day, (4) exploration, ie effort to prevent students from negative deeds that are not in accordance with the teachings of religion and culture of the nation, (5) cleaners, ie as cleaning themselves from hurt like arrogant, egotistical, jealous, , and so on, and (6) filters, ie, filtering out the culture of the nation itself and other peoples cultures that are inconsistent with the values of character.

Character education has values associated with attitudes and deeds that must be possessed by students as a basis for realizing their personality. These values include (1) believing in the existence of God Almighty, (2) obedience to the teachings of religion, (3) having and developing tolerance, (4) self-respect, (5) self-discipline, (6)) developing a work ethic, (7) having a sense of responsibility, (8) having a sense of openness, (9) self-controlling, (10) positive thinking, (11) developing self-potential, (13) has a sense of shame, (17) has a sense of shame or embarrassment, and (18) the growth of an honest attitude (Adipitoyo, 2008).

Suherman (2011) mentions the values of the characters there are also 18, among them: (1) religious, (2) honest, (3) tolerance, (4) discipline, (5) hard work, (6) creative, (7) self-esteem, (8) democratic, (9) curiosity, (10) national spirit, (11) love of the homeland, (12) respect for achievement, (13) friendly / communicative, (14) reading, (16) care about the environment, (17) social care, and (18) responsibility.

Substantially, the eighteen values based on the two opinions above are the same, only those terms used differently. For that, there will be taken eighteen amounts according to Suherman, because it is considered more representative and can represent the complete character. Theoretically, the eighteen aspects of the nation mentioned above is not difficult and does not require a long time to explain the

definition by the teacher to learners. With one or two meetings in the classroom, the teacher can explain the meaning and meaning of the nation's character value. But in the level of implementation in the attitude and everyday behavior of eighteen values of the nation's character is not easy to apply in daily life [8].

2.2. Student Handbook which using Approach SAVI on Tembang Dolanan

When learning a student not only use the ability to think or move but in learning, students are required to combine the knowledge of movement and thinking. Physical changes are related to intellectual activity and the use of all the senses during learning. Events that combine these four aspects according to [1] called SAVI. Somatic (S) is learning by moving and doing, A (Auditory) is learning by speaking and listening. V (visual) is learning by observing and describing. While I (intellectual) learn by solving problems and contemplate. To gain a clearer understanding of these four ways of learning will be described more fully [9].

"Somatic" is derived from Greek meaning soma-body (as in psychosomatic). If associated with learning it can be interpreted to gain by moving and doing. So, learning physical means learning with the sense of touch, kinesthetic, practical-involving the physical and using and moving the body while learning. This means that when students learn not only involves the brain alone and have nothing to do with what lies beneath it but discovers that a student combines or consists of the mind and body movements.

Somatic learning is reinforced by a neurological study that has uncovered the false Western cultural belief that mind and body are two separate entities. Their findings show that the brain is spread all over the body. The essence of the body is the mind, and the mind is the body. One unity that can not be separated. So the bodily learner is indirectly learning that combines between the motion (involving the body) and the intellect or their brain. To stimulate the mind-body connection, it should create an atmosphere of learning that can get people up and up from their seats and be physically active from time to time [10].

When hearing the sound of the woof, in mind surely it is the figure of a four-legged animal, has feathers, can be used as pets. It is impossible that in mind is a reptile. From the illustration illustrated that the auditory learner obtains information by listening. In other words, the auditory learner is a learner who gets an understanding of the activities performed orally.

Auditory learning is a standard way of learning for all societies since the beginning of history. Before Johannes Gutenberg invented the printing press in the 1440s, much of the information was delivered from generation to generation verbally. Epics, myths and fairy tales in all ancient cultures are conveyed through oral tradition. In other words, the auditory learner is able to learn from sounds, from the dialogue, from reading aloud, from telling others what has just been experienced, heard or learned, from talking to oneself from remembering sounds and rhythms.

Visual learning means learning by observing and describing. In the brain, there are more devices for processing visual information than all the other senses. Visual acuity is more prominent in some people. That's because in the brain there are more devices to process visual information than other senses. Basically, everyone is easier to learn if they can see directly the object in question. Students will more easily understand the function of the vehicle if students see directly the vehicle in question.

In learning activities, intellectual power or the ability to think someone is needed. The child can not understand the function of the vehicle if he does not have the intellectual ability. It can be interpreted that intektual is an activity that learners do in their mind internally when they use intelligence to reflect on an experience and create the relationship, meaning, plan and value of that experience. In other words, the intellectual is a part of the self that is pensive, creating, solving problems and building meaning [11].

2.3. Research Method

This research is descriptive qualitative. Data collection was done by observation (participants and nonparticipants) and in-depth interviews. The main instrument is the researcher, while the supporting instrument is the interview guide. Recorders and record tools are positioned as a data collection tool. Test the validity of data is done by extending the duration of observation, persistence, accuracy, and

triangulation. Data analysis is done by flow model in which there is data reduction, data presentation, verification, and inference [12][13].

3. Result

Character education in the textbook of students SAVI approach on the material tembang dolanan is classified based on 4 stages in SAVI approach, namely somatic, auditory, visual and intellectual. Where in each of these steps there are several characters that can be displayed. The following are the more details of the result.

3.1. Characters in Somatic Learning Step (Ayo Obahor Let's Move!).

Learning somatic means learning with the sense of touch, kinesthetic, practical-involving the physical and using and moving the body while learning. This means that when students learn not only involves the brain alone and have nothing to do with what lies beneath it but discovers that a student combines or consists of the mind and body movements. In learning somatic in this material tanjung dolanan there are six characters, namely discipline, hard work, friendship / communicative, love of peace, democratic, and responsibility.

Discipline

Discipline is an action that demonstrates orderly conduct and complies with various rules and regulations. The implications of this study are the sophistication of the SAVI approach at the time of the somatic learning step, i.e. moving, students are taught to walk or dance by the rhythm and also the rules that have been agreed previously. For example, when playing mushrooms, students have to dance with discipline, and should not dance to his heart.

Hard work

Hard work is a behavior that shows a genuine effort to overcome obstacles to learning, tasks and complete tasks as well as possible. At this stage of education, the character of hard work is realized with the student's effort to dance or enirukan every movement on the dolanan song. For example, in the tembang dolanan cublak-cublak suweng, students who act as pak empong must work hard to find where suweng or small stone that is being hidden by other students.

Friendly/communicative

Being friendly is an act that shows the pleasure of talking, getting along, and working with others. In this case, it appears in the students' excitement when communicating with their classmates to discuss dance duties by the dolanan song. All movements in the dolanan are done together and interspersed with the games, so this game makes the students become more friendly and also can work together well.

Love peace

Peaceful love is the attitude, the words, and the actions that cause others to feel happy and secure for their presence. Master creates a friendly classroom atmosphere, familiarizes the class's anti-violent behavior, gender unbiased learning, and loving class kinship. In this case, teachers do not discriminate between types of games suitable for men or women, as all games in the dolanan song are played together without discrimination.

Democratic

Democratic is a way of thinking, acting, and acting that judge equal rights and obligations itself with the powers and duties of others. The class implications related to the learning of dolanan tembang are at the time of the cublak-ublak suweng game, all students, both male and female, both smart or underprivileged students, or wealthy and disadvantaged students, all have the same chance to be elected become player pak empong. Likewise in the game mushrooms, all students can be caught when the game takes place.

Responsible

Responsibility is the attitude and behavior of a person to carry out his duties and obligations, which he should do, to oneself, society, environment (nature, society and culture), state and God Almighty. For example, in the dolanan tembang cublak-cublak suweng, students acting as pack empong must be responsible for finding where suweng or small stone is being hidden by other students.

3.2. Characters in Auditory Learning Step (*Ayo Ngrungokake!* Or Let's Listen!*)*

Auditory learning is a standard way of learning for all societies since the beginning of history. Before Johannes Gutenberg invented the printing press in the 1440s, much of the information was delivered from generation to generation verbally. Epics, myths and fairy tales in all ancient cultures are conveyed through oral tradition. In other words the auditory learner is able to learn from sounds, from dialogue, from reading aloud, from telling others what has just been experienced, heard or learned, from talking to oneself from remembering sounds and rhythms. In learning auditory on the material tembang dolanan there are three characters, namely independence, tolerance, and curiosity.

Independent

Independent is an attitude and behavior that is not easy depending on others in completing tasks. In this case, teachers can create a classroom atmosphere that provides the opportunity for learners to work independently. In relation to learning Java *tembangan*(songs), teachers provide individual tasks to listen to every lyrics that are played then students independently also work on the problems associated with the song.

Tolerance

Tolerance is an attitude and action that respects different religions, ethnicities, ethnicities, opinions, attitudes, and actions of others who are different from themselves. Examples of learning on the material *tembang dolanan* is the students should respect each other friends. Learning by listening also teaches that students are taught to always listen well, and without discriminating who is heard.

Curiosity

Curiosity is the attitude and action that always strives to know more deeply and extends from something learned, seen, and heard. In this case, the teacher can create an inviting classroom atmosphere. When listening to the dolanan song being played by the teacher, students have a high curiosity about the lyrics and the content of the song.

3.3. Characters in the Visual Learning Step (Ayo Ndeleng!Or let's see!)

Visual learning means learning by observing and describing. In the brain there are more devices for processing visual information than all the other senses. Visual acuity is more prominent in some people. It is because in the brain there are more devices to process visual information than other senses. Basically everyone is easier to learn if they can see directly the object in question. Students will more easily understand the function of the vehicle, if students see directly the vehicle in question. In learning visual on this material *tembang dolanan* there are three characters, namely love the homeland, love to read, and care about the environment.

Love the country

Love the homeland is a way of thinking, acting, and doing that shows loyalty, awareness, and high appreciation of the language, the physical, social, cultural, economic, and political environment of the nation. In learning *nembang dolanan*, when students are invited by teachers to see a video about the beauty of al: am as in the *tembang ilir-ilir*, students are invited to always love their prosperous fertile homeland.

Like to read

Fond of reading is the habit of providing time to read the various readings that give good to him. In addition to watching the video *tembang dolanan*, students are also invited to read the lyrics of *tembang dolanan* that exist in textbooks. In addition, students also read the stories contained in the tembang dolanan. Thus in this learning, students not only passively receive information from teachers only, but students also actively read to dig deeper information.

Environmental care

Caring for the environment is the attitude and action that always seeks to prevent damage to the surrounding natural environment and develop efforts to repair the already existing natural damage. After the students are invited to see the video *tembang dolanan* which contains beautiful nature around, then the students are taught also to always care about the environment.

3.4 Characters in Intellectual Learning Step (*Ayo mikir!* Or Let's Think!)

In learning activities, intellectual power or the ability to think someone is needed. The child can not understand the function of the vehicle if he does not have the intellectual ability. It can be interpreted that intellectual is an activity that learners do in their mind internally when they use intelligence to reflect on an experience and create the relationship, meaning, plan and value of that experience. In other words, the intellectual is a part of the self that is pensive, creating, solving problems and building meaning. In intellectual learning in this material *tembang dolanan* there are two characters, namely religious and creative.

Religious
Religious is attitudes and behaviors that adhere to the implementation of religious teachings that are adhered to, tolerant of the implementation of other religious services, and living in harmony with the followers of other religions. When studying the content or message contained in the *tembang dolanan*, the students become more religious.
Creative
Creative is thinking and doing something to produce a new way or result from something you already have. This value can be familiarized by the teacher by creating learning situations that can cultivate thinking power and act creatively, as well as by giving tasks that challenge the emergence of new works both authentic and modified. One example of learning in *tembang dolanan* is when students are asked to make a *tembang gancaran*, students are required to be creative in making imagination about the lyrics of *tembang dolanan*with the intention of able to yield good work.

4. Conclusion

Broadly speaking, during the process of learning *dolanan* tuition by using teaching materials SAVI approach for fourth graders of elementary school in Madiun Residency, then the students are also taught about the characters. During the learning process, starting from somatic learning, students are invited to discipline, hard work, friendly / communicative, love peace, democratic, and responsibility, on learning auditory students are invited to independence, tolerance, and add curiosity, on student visual learning invited to always love the homeland, love to read, and care about the environment, and on the students' intellectual learning is invited to be more religious and creative. The characters mentioned in each of SAVI's learning steps are just a few that teachers can teach, there are many other characters that can be taught, of course, with more interesting methods.

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