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Proceedings of the 3rd International Conference on Innovative Research Across Disciplines (ICIRAD 2019)

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The International Conference on Innovative Research across Disciplines (ICIRAD 2019) is a biennial international conference, which is a platform for cross-discipline studies among international researchers and scholars across the world. It brings together state of the art research in the teaching of natural sciences, humanities, technology, health and medicine. ICIRAD is organized by the Research and Community Service Institute of Universitas Pendidikan Ganesha. ICIRAD has been conducted since 2015 and this year, 2019 becomes the third event. The 3rd ICIRAD will be held on the 20-21 September 2019 at Grand Inna Bali Beach Sanur Bali, Indonesia, an innovation venue that creates stimulating, sociable, and friendly academic atmosphere..

Please click here for the conference website. (*Conference website no longer available.*)

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PREFACE

Om Swastiastu,
Assalamualaikum Warahmatullahi Wabarakatuh,
Namo Buddhaya,
Shalom.
May peace be with us all.

First, let us send our profound gratitude upon Ida Sang Hyang Widhi Wasa, the Almighty God, for His blessings of the opportunity to have this event, the 3rd International Conference on Innovative Research Across Disciplines (ICIRAD 2019), here in Sanur Bali. It is my honor and pleasure as Chairman of this event to welcome you all.

This conference is organized by the Research and Community Service Institute of Universitas Pendidikan Ganesha as a platform for cross-discipline studies among international researchers and scholars across the world. It brings together state of the art research in the teaching of natural sciences, humanities, technology, health and medicine. In this year, the theme of this conference is "Advancing into Digital Era through Innovations Across Disciplines". Through this theme, we are trying to meet the need of

educational field to face the challenge in embracing the 4.0 Industry Revolution.



The 3rd International Conference on Innovative Research Across Disciplines is attended by over 130 presenters with 155 abstract submissions. Those participants come from 3 different countries: Indonesia, Australia, and Malaysia. We also gladly announce that in this 3rd ICIRAD, we are joined by the 1st International Conference on Physical Education, Sport, and Health, also known as IcoPESH which is initiated by Sport and Health Faculty of Undiksha.

in our beloved joint conference, we are proudly address that we have 4 honorable keynote speakers: Prof. Dr. Cheng Hwee Ming from University of Malaya, Malaysia, Prof. Dr. H. Adang Suherman, M.A. from Universitas Pendidikan Indonesia, Dr. Ania Lian from Charles Darwin University, Australia, and Prof. Peter Waterworth, from Deakin University, Australia. On this blessed occasion, let us express our heart-felt thanks and appreciation for all of our keynote speakers and panelists.

Finally, it is a privilege to serve as ICIRAD Chairman in these exciting times. Once again, welcome to Bali and in the name of the organizing committee, we thank you for participating in our 3rd International Conference on Innovative Research Across Disciplines. Have a nice and fruitful conference.

Om Shanti, Shanti, Shanti, Om,
Wassalamu'alaikum Warahmatullahi Wabarakatuh,
Namo Buddhaya.

Dr. Ni Luh Putu Sri Adnyani, S.Pd., M.Hum.
Chair
Singaraja, 20 September 2019

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[Digitized Local Folklores in EFL Reading Classroom](#)

Yohanes Heri Pranoto, Lisnani

This study aimed at reporting the implementation of the use of digitized local folklores to empower reading comprehension skills of junior high school students. This classroom action study was applied to a number of grade VII junior high school students. It engaged two stories about Palembang City -...

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Developing Coloring Books to Enhance Reading Comprehension Competence and Creativity

Anselmus Inharjanto, Lisnani

Developing a reading learning media can be an effort to increase students' reading comprehension, but there are many teachers who do not put much attention into it. This research aimed at developing a parenting colouring book as a learning media to enhance elementary students' reading comprehension ability...

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Evaluation of Curriculum 2013 Implementation in Elementary Schools

Sukarman

This research aims to contribute several ideas towards the implementation of the 2013 curriculum for elementary school teachers in Palembang. This descriptive qualitative research used interviews and questionnaires as data collection techniques. The results of the 2013 Curriculum implementation evaluation...

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Image Patch Extraction in Text Area of Balinese Palm Leaf

Manuscripts with Gabor Filters



Made Windu Antara Kesiman, Gede Aditra Pradnyana

In an effort to build a word spotting and indexation system for the Balinese palm leaf manuscripts, text area detection and image patch extraction in the text area must be done effectively. However, there is no space between words in writing with Balinese scripts. This paper aimed at describing a complete...

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Diversity Genera of Coliforms Bacteria in Buyan Lake

I W S Warpala, N L P M Widiyanti, I A Suryanti, I W S Wibawa

The cleanliness of the water is the main requirement for the health. Microbiological parameter is one of the parameters that should get the attention because its impact is dangerous, that can cause infectious diseases. Most coliforms bacteria do not cause disease, but its presence can indicate the presence...

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Turnover Intention as an Impact of Job Insecurity Among Bank Employees

Ega Leovani, Anselmus Inharjano

The purpose of this research was to investigate the influence of job insecurity on the turnover intention among bank employees in Palembang. This descriptive qualitative study employed job insecurity as the independent

variable and turnover intention as the dependent variable. The data collection technique...

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Playing with e-CALF: “Regulate My Own Learning”

Ni Wayan Surya Mahayanti, G.A.P. Suprianti, Ida Ayu Made Istri utami, I Putu Indra Kusuma

e-CALF facilitates digital natives to learn in their way. The researcher of this study used descriptive qualitative design to investigate the implementation of e-CALF in the school setting by finding six students' experiences, challenges, and responses in playing the game. It also found out how the implementation...

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Analysis of Students' Affective Character in Microbiology Class Through Mini Research Based on Learning Model

Hasruddin, Aryeni, Dirga Purnama, Evi Lestari

Microbiology materials are taught with mini-research patterns, namely observation of bacterial colonies, fungal characteristics, bacterial staining, bacterial biochemical tests, and bacterial identification. The purpose of this study is to describe the character of students related to the affective abilities...

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Printed Media Versus Digital Media: Which One is More Effective?

Ni Made Ratminingsih, I Gede Budasi

Media plays an important role in the teaching and learning process. It is a tool that contains materials that students learn. This paper aimed at describing the result of experimental research which investigate the effect of two different media, printed and digital, used to teach literacy particularly...

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Mechanical Properties of Natural Materials from Kalimantan as Substitute Material for Reinforcement Buildings

Andromeda Dwi Laksono, Ilham Prabu Seno, Rifqi Aulia Tanjung, Basyaruddin

Kalimantan has abundant natural resources, including wood. The physic properties of wood have varying strength and flexibility and could replac concrete reinforcement steel. In this study, the mechanical properties and sound insulation of one of Kalimantan's natural fiber combined with polyester matrix...

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Teacher and Students' Perception on Using Kahoot! for English Learning

Kadek Eva Krishna Adnyani, I Wayan Adnyana, Ni Nyoman Murniasih

The purpose of this research was to determine (1) Teacher's perception on using Kahoot! for English learning; (2) Students' perceptions on using Kahoot! for English learning; and (3) Constraints encountered while using Kahoot! for English learning. This is a quantitative descriptive research. The research...

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Students' Perceptions of the Utilization of ICT in English Learning: Way or Barrier?

Ira Irzawati, Anastasia Ronauli Hasibuan

This study aimed to describe the students' perceptions of the utilization of ICT in English learning. One hundred and thirty-four students of a private university in South Sumatera were involved as participants of this study. The questionnaires were administered to gain a portrait of students' perceptions....

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Developing Balinese Culture–Based Textbook for Intermediate Level BIPA Instruction

Putu Ayu Prabawati Sudana, I Made Suta Paramarta, IGA Pt Novita Sari Paragae, I Dewa Gede Budi Utama

This study aimed at developing a Balinese culture-based textbook for intermediate level BIPA (Indonesian Language for Non-native Speakers). The research method applied in this study was Gall and Borg Research and Development Method. The steps already conducted were 1) need analysis, by distributing questionnaires...

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Strategy for Empowerment of Pottery Craftsmen in Kasongan Tourism Village, Bantul Regency

Khafid Ismail, Sucihatiningsih Dian Wisika Prajanti, Widiyanto

This descriptive qualitative study which aimed to formulate the empowerment strategy for pottery craftsmen community in the Tourism Village of Kasongan using primary and secondary data. SWOT analysis was used in this study. The data collected through observations, documentation, interviews and focus...

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Mapping and Distribution of Useful Plant Species in Bukit Kangin Forest, Pegringsingan Village, Karangasem, Bali

Nyoman Wijana, I Gusti Agung Nyoman Setiawan

The objectives of this research were to produce a distribution map and to know the distribution patterns of useful plant species in the original nature in Bali Aga Tenganan Pegringsingan village. This research belongs to explorative and descriptive research. The locations and population of this research...

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"Seed Bag" Production Implementation as an Oriented Critical Institutional Revegetation in "Green Economy"

Sucihatningsih Dian Wisika Prajanti, Eva Banowati, Talitha Widiatningrum

The purpose of this study is to introduce a new method of revegetation of critical land using seed bag to restore the carrying capacity of the land which is diminishing due to natural disasters. This study took place in the Ledek Mountain area of Semarang State University. The variables of this research...

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Students' Speaking Anxiety on their Speaking Performance: A Study of EFL Learners

Anastasia Ronauli Hasibuan, Ira Irzawati



In the new era of industrial revolution 4.0, it demands that people should enhance their communication competence to interact globally. The ability to speak a foreign language is prominently influenced by one of the problems, namely speaking anxiety. This language production barrier affects various aspects...

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The Use of "Schoolology" in Pragmatics Classes

Ni Made Rai Wisudariani, Sang Ayu Putu Sriasih, Ida Ayu Sukma Wirani, Ni Putu Seniwati

This study was a descriptive qualitative design which focuses on describing the efficacy of Schoolology for teaching Pragmatics. Lecturer who taught at the fourth semester and the students of the Indonesian Language and Literature Education Department were involved as the participant in this study. The...

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The Economic, Ecological, and Educational Benefits of Sea Turtle Conservation in North Bali Region

Gede Ananta Wijaya, I Nyoman Purwakanta, I Wayan Tantrawan

This study aimed at examining the economic benefits the sea turtle conservation brought to the coastal community, the impacts on the environment, and the benefits that it brings about to education sectors,

especially as one of the biodiversity learning resources for the communit
and students in the...



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Values of Character Education in the Characterizations of Dory in Disney's Animated Feature Finding Dory (2016)

I.G.A. Lokita Purnamika Utami, Ni Komang Arie Suwastini, Ni Nyoman Artini, Ummi Kultsum

As technology brings both positive and negative impacts on children's characters, the present study argues that watching movies online can provide access to entertainment that contains values of character education as showcased by Disney's animated feature entitled Finding Dory. Through textual analysis,...

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The Meaning of Economic Activity in the Family Economics from Balinese Women's Perspective

Luh Indrayani, Lucy Sri Musmini

Women, like men, are also in charge in family economics. This study aimed at understanding the meaning of economic activity in the family economics from Balinese women's perspective. The approach of this study was transcendental phenomenology by discovering the meaning and reality of informants about...

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The Effect of Financial Literacy, Gender, and Students' Income on Investment Intention: The Case of Accounting Students

Nyoman Trisna Herawati, Ni Wayan Yulianita Dewi

Investment activities are essential to be developed among millennial generation, including college students. The development of fintech should be able to make students participate in investing activities in the stock market. However, a survey shows that there is a lack of traders from the younger generation....

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Usability Testing in Tourism Object Management System

I Gusti Ngurah Putra Arijaya, I Made Ardwi Pradnyana, I Made Agus Wirawan, I Wayan Suwendra, I Gede Putra Nugraha, I Nengah Suparta

In developing a website, it must go through usability guidelines to ensure a system is easy to use. Usability is an important aspect to assess the quality of the website interface. This research was conducted to analyze the usability level of the Tourist Management System. This study used a usability...

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Correlation Between Body Mass Index (BMI) and Level of Anxiety to Menstrual Cycle for Young Female Students in t Department of Midwifery

Luh Ari Arini, Ketut Espana Giri, Anjar Tri Astuti

Menstruation is the initial sign in which the function of a woman's reproductive organs has matured. This situation happens every month in a periodic cycle. The menstrual cycle of young women tends to be irregular or disorders because it is influenced by the balance of the estrogen and progesterone hormone...

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Sustainability Reporting Practice in Indonesian Public University: How to Support the Reporting Process?

Putu Sukma Kurniawan, Sunitha Devi, I Gede Putu Banu Astawa

This research aimed at providing an overview of sustainability reporting practices in Indonesian public universities. This research contained two important discussions. The first discussion explained the development of sustainability reporting practices in Indonesian public university and the last discussion...

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A Need Analysis and Instructional Strategy in the Village Financial Administration Through Village Financial System

Media



Ni Luh Gede Erni Sulindawati, I Gusti Ketut Arya Sunu

This study aimed at analyzing the needs and an appropriate instructional strategy related to village financial administration. The study used a development method, following the stages of the potential and the need problem in the instruction and the need of village apparatus in administrating the village...

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The History of Taman Sari Temple in Sebudi Village, Selat, Karangasem, Bali and its Potential as a Tourist Attraction

I Made Pageh, I Wayan Putra Yasa

This study is qualitative research that aims to find out the history and spiritual tourism potential in Taman Sari Temple in Sebudi Village, Selat, Karangasem. The steps of the research carried out were determining the location, determining the informant, collecting data, triangulating data, analyzing...

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Empowering Local Potentiality (Local Genius) as Sociocultural Capital to Develop Tourism

I Wayan Kertih

This study aimed at identifying local genius empowerment as socio-cultural

capital to develop tourism in Nusa Penida, Bali province by using a cultural ethnographic study approach. The respondents in this study were determined through snowball sampling. The result showed that there were various forms...

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Spatial Analysis of Rural–Urban Linkages in Suburbs of Denpasar City

Putu Indra Christiawan, I Gede Astra Wesnawa, I Made Sarmita

The debate about rural-urban linkages is crucial in regional development. Rural-urban linkages can be viewed from people's movement as well as the pattern of goods and services. The present study aims to elaborate this linkage in the suburbs of Denpasar City. Primary data had been collected from sample...

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Primary Literacy Activities in Basic Education in Bali: Describing Implication on Children Reading and Writing in EFL

N.N. Padmadewi, L.P. Artini, L.G.R Budiarta, P.A.R. Apriliadewi

The results of PISA (Program of International Student Assessment) revealed that Indonesia students still have a low literacy level. This research aimed at investigating the implementation of Primary English Literacy activities at elementary school and finding out the effect of the activities toward the...

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The Development of Android-Based Balinese Dance Dictionary

Kadek Yota Ernanda Aryanto, I Nengah Suandi, I Wayan Mudana, Ni Luh Partami, I Made Bandem

Almost all of the terms used in Balinese dance adopt words or terms from the Balinese language which can make difficulties for those who are interested in learning Balinese dance. Current technologies, especially in mobile technology, can certainly be a solution and become medium to disseminate the Balinese...

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Knowledge and Perception of Reproductive Health Among Men Who Have Sex with Men

Made Kurnia Widiastuti Giri, Ni Komang Arie Suwastini, Ni Nyoman Artini

The Men Who Have Sex with Men (MSM) lives in irrational stigma of sexual behavior where the community does not have a complete knowledge about MSM sexual behavior. This study aimed to describe MSM's sexual behavior, knowledge, and perception of reproduction health. This study was designed as systematic...

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Perceptions and Needs Among Diabetes Patients: A Qualitative Study

Made Kurnia Widiastuti Giri, Adnyana Putra

Diabetes mellitus is a degenerative disease that requires multi-dimensional management. Nowadays, the current phenomenon in the community happens that the patients only focused on pharmacological therapy without getting suggestions that describing the other dimensions. This study aimed at analyzing the...

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English Learning Media for EFL Elementary Learners: A Development of Camtasia-Based Digital Video

Luh Gede Eka Wahyuni, Ade Asih Susiari Tantri

Teachers' less competence in evolving technology-based media into teaching and learning process becomes the basis for this study to develop a learning video by using Camtasia Studio. A design and development research was used with ADDIE model. The development was done based on need analysis through document...

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Risk Factors for Risky Pregnancy in Patas Village, the Working

Area of Gerokgak I Health Center

Ni Komang Sulyastini, Luh Nik Armini, Ni Nyoman Ayu Desi Sekarini, Pu Irma Pratiwi

Every pregnant woman needs to be monitored during her pregnancy. One observation that can be done is through screening and early detection during pregnancy. High and very high risk pregnancies increase maternal complications and death. This study revealed the risk factors for risky pregnancy in Patas...

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PowToon-Based Video Media for Teaching English for Young Learners: An Example of Design and Development Research

Luh Diah Surya Adnyani, Ni Wayan Surya Mahayanti, G.A.P Suprianti

This study aims to develop a digital teaching media using PowToon that will help raise the integration of ICT in the young learner classroom. In this study, a design and development research method (DDR) was used. The media were developed by applying phases of ADDIE. The development was based on questionnaires,...

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Data Acquisition of Electric Power Usage as the Implementation of the Internet of Things at Smart Home

A.A. Kusuma Dewi, Gede Suweken, K.A. Ady Aryanto, K.Y. Ernanda Aryanto

Data from the ASEAN Center for Energy (ACE) shows that Indonesia has the highest level of energy consumption in Asia. Home automation, a smart home scheme utilizing the vast development of the latest networking and AI technologies, has been proposed to tackle the problems. In this work, we have provided...

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Gamifying Balinese Local Story: Facilitating Gen Z in Learning English

Putu Kerti Nitiasih, Luh Gd Rahayu Budiarta, Ni Wayan Surya Mahayanti

Working with nowadays children, technology cannot be neglected to be involved in their learning. Gamification in education becomes very popular as one of the most effective methods in facilitating students' learning. Inserting gamification elements in Balinese Local Stories was the purpose of this R&D...

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Design of the Integrated Health Information System in the District of Bangli

KYE Aryanto, IW Abyong, KA Seputra, GA Pradnyana, A.A.G Yudhi Paramartha

Healthcare information, technology, product of technology, and information technology that supports the development of healthcare can be resulted from research and development of science and technology. The presidential regulation stated that the components of the healthcare management were

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Learning Japanese Language Based on 2013 Curriculum at Elementary Schools in Bali

Desak Made Sri Mardani, I Wayan Sadyana, Luh Diah Surya Adnyani

This study aimed at describing the implementation of the 2013 curriculum in learning Japanese at elementary schools in Bali, considering that learning Japanese has not been taught only in high /vocational school level. The results of questionnaires and interviews revealed that only 20% of them have implemented...

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Uncovering Assessment Literacy of Elementary Teachers in Singaraja, Bali

A.A.I. Ngurah Marhaeni, A.A. Gede Yudha Paramartha, Dewa Gede Firstia Wirabrata, Nyoman Dantes, I.K. Agus Susilawan, Dewa Ayu Puteri Handayani

This study aimed at determining the teacher assessment literacy of elementary school teachers in Buleleng Regency. It was a descriptive study with the sample of 144 elementary school teachers selected by using multistage random sampling technique. The data were collected by using questionnaire and interview...

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STEM Oriented Mathematics Learning with GeoGebra

Gede Suweken

This paper presents a series of GeoGebra-based mathematical applet (mathlets) for science and math subjects, developed for elementary, middle, high school, and Calculus students. The mathlets were developed in order to fulfill requirements for qualified mathematics learning as expected by the K-13 curriculum....

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Mathematics Learning Outcomes Based on Gender in the Inquiry Learning Model

Ni Ketut Erawati

Gender differences cannot be avoided under any circumstances. The same thing also happens in a classroom. This study aimed at analyzing students' learning outcomes based on their gender in the inquiry learning model. This research used a quantitative descriptive study with a comparative causal method....

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Musculoskeletal and Postural Stress Evaluation as a Basic : Ergonomic Work Attitudes on Welding Workers

Wahyu Susihono, Yuri Selviani, Ida Ayu Kade Arisanthi Dewi, Ni Luh Gede Liswahyuningsih

Production process in the construction industry is mostly done by human labour in many manual material handling activities ranging from transportation, machine set-up, and workpiece arrangement. At our subject company, 33 workers have complaints about muscle parts, which are commonly referred to musculoskeletal...

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Carbonization Characteristics of Municipal Solid Waste/Cow Manure Blend

Made Gunamantha, Made Vivi Oviantari, Ni Putu Sri Ayuni

The goal of this research was to elucidate the characteristics of organic fraction of municipal solid waste or cow manure blend biochar produced in a batch-type carbonization reactor at range temperature, ranging from 300 to 350 degrees Celcius. The OFMSW composition to cow manure in feedstock were varied...

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Validity and Reliability of Critical Thinking Disposition Inventory

I Wayan Redhana, Ida Bagus Nyoman Sudria

The aim of this study was describing the validity and reliability of critical thinking inventory. The type of study was survey research. The study population was students of junior high schools in the Province of Bali, Indonesia. Samples were drawn by a multistage random sampling technique. In each district,...

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Fraud Prevention Using Village Financial Management Control System

A A Gde Satia Utama, Tri Nur Afiyah Wulandari

The study aims at exploring the Internal Control System in preventing fraud in village financial management. This research applied qualitative exploratory with a case study method. The Data of this research were primary and secondary data through interviews, documentation, and observation from Ketapang...

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Development of Natural Fiber Composites Based on Thickness Swelling Using Palm Fiber and Coconut Fiber Paper

Dewi Oktofa Rachmawati, I Gede Aris Gunadi

Palm and coconut fibers are able to accommodate different water, have good insulation of temperature and sound. The combination of palm and coconut

fibers as a reinforcement of natural fiber composites is influenced by the characteristic thickness of the constituent materials. This study aimed at describing...

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An Error Analysis on English Phrase Category Done by Students

I Wayan Swandana, Dewa Putu Ramendra, Kadek Sintya Dewi

This article aims at analyzing English phrase category done by the English students majoring in English Education Study Program. It discusses about the types of errors on English phrase category and the factors influencing the errors. Qualitative design was chosen in this study. The subject of this study...

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Improving Teaching Ability with Eight Teaching Skills

Nyoman Sugihartini, Gede Partha Sindu, Kadek Sintya Dewi, Masduki Zakariah, Putu Sudira

In a teaching process, learning media should be developed to engage students in a classroom. This study aimed at developing learning media for microteaching courses in the form of teaching simulation videos. The development model used in making this media was the ADDIE model (Analysis, Design, Development,...

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Development of e-Modules Entrepreneurship

Putu Eka Dianita Marvilianti, Nyoman Sugihartini

This research was aimed to develop media in the form of e-modules for entrepreneurship lectures. The e-module was developed using the ADDIE model (Analysis, Design, Development, Implementation, Evaluation). (1) Analyze, conduct analysis related to system requirements and curriculum analysis. (2) Design,...

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Tourism Development in Jembong Sub-Village, Ambengan Village

Wahjoedi, I Ketut Iwan Swadesi

This research aimed at mapping the tourism potency and formulating pilot tourism objects to be developed in the area of Jembong Waterfall, Ambengan Village. The data was collected by using non-test technique utilizing document study and analysis, observation, questionnaire and interview. The result of...

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The Analysis on the Implementation of Mobile-Assisted Language Learning Strategy Through Quizizz Application to Improve Student's Reading Comprehension at Undiksha Singaraja

P.A.K. Juniarta, K.S. Dewi, G. Mahendrayana, I.W. Swandana

This research aimed at improving student's reading comprehension by applying MALL-based learning strategy through Quizizz application in literal reading class. Subjects of the research were the second-semester students of D class at Undiksha Singaraja who took the literal reading subject. The research...

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Sport–Ecotourism Development in Ambengan Village, Sukasada District, Buleleng Regency

I Putu Panca Adi, Wahjoedi, Wasti Danardani

This study aimed at mapping and carrying out a SWOT analysis of the potential of sport ecotourism in Ambengan Village, Sukasada District, Buleleng Regency, Bali Province which was integrated and sustainably expected to be able to reflect Bali and in line with Bali as a world tourist destination. The...

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Error Analysis of Latin-to-Balinese Script Transliteration

Method Based on Noto Sans Balinese Font

L. H. Loekito, G. Indrawan, Sariyasa, I K. Paramarta

Balinese script is a part of Balinese culture which is feared to be extinct due to the decrease in its use. This research is one of the efforts to preserve Balinese Script using technology, which focuses on the error analysis of Latin-to-Balinese script transliteration method based on Noto Sans Balinese...

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Essays Written by Primary School Students at Grade Six in Tabanan Regency, Bali Province: A Syntactic Approach

Ida Bagus Putrayasa

This study aimed to describe types, unity, and structures of sentences contained in the essays written by primary schools students at grade six in Tabanan regency, Bali province. The method used to collect the data was document recording and analyzed by a descriptive analysis technique. The results showed...

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Analysis of E-Government Governance in Bangli District's Government Using the COBIT 5 Framework

Putu Juliantari, Gede Rasben Dantes, Dewa Gede Hendra Divayana

Evaluation of e-government governance in Bangli Regency was conducted to address the problems of efficiency and effectiveness of e-government

management, thus providing an overview of the actual conditions with the results in the form of recommendations to improve the quality of e-government governance....

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Development of Rampak Kendang Module Based on Multiple Intelligences for Elementary School Teachers

Fery Setyaningrum, Heni Siswantari

The phenomena of the lack of instructional media on cultural arts and skills materials happened in Primary Schools in Patimuan District Cilacap, that is Rampak Kendang Art. Then, the learning modules based on Multiple Intelligences has been developed. The purpose of this study was to elaborate the development...

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Developing Storyline for Role-Playing Games Based on Balinese Folklore for Preserving Local Wisdom and Character Education

Ni Komang Arie Suwastini, Gede Rasben Dantes, I Nyoman Laba Jayanta, Christina Turut Suprihatin

The present study is focused on building the storyline for the game designed in a Role-Playing-Game that allows players to set the course of their quests. The steps of the research include identifying the Balinese folklore to be included; analyzing of the roles of these characters in the game by using...

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Gusti Ayu Murniasihasih's Naked Body Biography

Hardiman, Luh Suartini

This article is a part of the research entitled "An Effort to Compile the Biographies of Contemporary Balinese Women Artists". The purpose of this article is to discuss Gusti Ayu Kadek Murniasihasih's naked body biography from the perspective of cultural studies. This article is based on the view of...

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The Development of Physical Sports and Health Education Learning Media Based on Android Applications

I Ketut Iwan Swadesi, I Nyoman Kanca

Information and communication technology (ICT) is a necessity in the effort to achieve better educational outcomes. The purpose of this research was to develop Physical Sports and Health Education Learning Media with Android Application-Based, which involved students, teachers and academic experts in...

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The Quality of Observation Results and Question Formulatio of Vocational School Teachers in Scientific Approach Implementation

I Wayan Subagia, I Gusti Lanang Wiratma

The use of the scientific approach as an idea of learning becomes one of the Indonesian government policies in education. This paper aimed at describing the quality of observation results and questions formulation of vocational school teachers in scientific approach implementation. This study involved...

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Dance Learning for Children with Moderate Mental Retardation at the Pembina State Special Education School of Yogyakarta

Heni Siswantari, Mira Setia Wati

SLB Pembina Yogyakarta concentrated on students with mental retardation category of mild, moderate, to severe scales. Dance learning was given to all students as an extracurricular activity to hone the children's motor skills. This study aimed to describe the dance learning for children with moderate...

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Concept of Sound in Tifa as Papua's Contextual Learning Media

Supriyadi, I. D. Palittin, Desy Kumala Sari

This study aimed to determine the use of Tifa music instruments in sound concepts as a contextual science learning media. The focus of this research is the use of Tifa music instruments which are often used in traditional ceremonies by the Malind tribe in Sota District, Merauke Regency. The research...

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Prevalence of Anemia and Stunting in Early Adolescent Girls

Ni Wayan Dewi Tarini, Wayan Sugandini, Ni Komang Sulyastini

This study aimed at determining the prevalence of anemia and stunting, focusing on the relationship between anemia and stunting in early adolescents. The design a cross-sectional study was applied by taking secondary data from the First Quarter Report of Youth Visits at Sukasada I Public Health Center...

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Woodball Mental Exercises

Gede Doddy Tisna, Gede Eka Budi Darmawan

Woodball achievement is inseparable from several factors, including physical, technical, mental, and tactics factors. Mental factors need special attention from coaches and psychologists, so the performance of woodball athletes can be improved. Mental is influenced by internal factors and external factors....

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Knowledge and it's Mental Awareness Toward the Incidence of Sports Injuries Among Participants of Student's Football Team

I Made Satyawan, I Kadek Happy Kardiawan, Ketut Chandra Adinata Kusuma

There are internal and external factors affecting the occurrence of sport injuries, in which psychological aspect can be considered as one of the factors. This study aimed to analyze the correlation between the knowledge and mental responses of sports injuries among participants of student's football...

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Improvement of Physical Fitness Through Management of Daily Physical Activity of Elementary School Students

Sasminta Christina Yuli Hartati, Taufiq Hidayat, Hari Wisnu, Bayu Budi Prakoso, Suroto

Previous researches have discussed how learning Physical Education (PE) alone is not enough to improve students' physical fitness. For this reason, PE class serves as a tool for forming healthy lifestyles through active participation in physical activity (PA) and sports. This article aims to explain...

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Development of Basic Football Learning Techniques (Kicking) Through Digitalization of Learning Material

Sandey Tantra Paramitha, Iman Imanudin, Syam Hardwis, Deni Maulana Suwanta

This research aimed at improving the quality of learning the basic techniques of kicking football in the form of digitalization. The method used in this study included the method of analysis. The design methods were structured through making an implementation of digital application designs. The research...

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Comparison Between the Effects of 10 Repetition 2 Sets Footwork with 5 Repetition 4 Sets Footwork for Improving Trainees' Agility in Badminton Training

I Putu Astrawan

Aimed at comparing the effectiveness of footwork with 10 repetition 2 set and with 5 repetition 4 set footwork, this study was conducted in pretest-posttest control group design, involving 42 male badminton students enrolled in professional training program of Ganesha University of Education. Group 1...

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Interaction Between Body Image and Exercise Activity



Adnyana Putra, I Ketut Sudiana, Made Kurnia Widiastuti Giri

This article review was made to discuss the relationship between body image and exercise activity. It is suggested on the articles that negative body image was mostly found in women. Negative body image restricts person's choices to do exercise activity and related to eating pattern of athletes. In the...

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Contemporary Academic Research and the Challenges of the Digital Era

Peter G. Waterworth

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Improvement of Physical Fitness Through Management of Daily Physical Activity of Elementary School Students

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 Hari Wisnu³, Bayu Budi Prakoso⁴
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Abstract—Previous researches have discussed how learning Physical Education (PE) alone is not enough to improve students' physical fitness. For this reason, PE class serves as a tool for forming healthy lifestyles through active participation in physical activity (PA) and sports. This article aims to explain the improvement in student's physical fitness through the regulation of students' daily physical activities (DPA) in PE class and outside PE class. The research employed a randomized pretest-posttest design. The research subjects were selected using random cluster sampling from a population of 21 elementary schools. The student's DPA was monitored using a DPA card, while their physical fitness was measured using MFT. The data analysis employed descriptive statistics, t-tests, and ANCOVA. The results showed that group differences and increasing PA simultaneously affect physical fitness. While group differences do not affect physical fitness, PA significantly manages to be the moderator of increasing physical fitness.

Keywords—physical fitness; monitoring; daily physical activity; PE.

I. INTRODUCTION

Health problems lead to the low quality of active human lifestyle, more specifically, the low participation rate in physical activity. WHO stated that Physical Inactivity is the fourth leading risk factor for global mortality (6% of deaths globally), behind high blood pressure (13%), tobacco use (9%) and high blood glucose (6%). Overweight and obesity are responsible for 5% of global mortality [1]. If there are no problems in the diet, one of the early signs of the low active participation in physical activity is obesity. Passive lifestyles such as watching television, playing video games, and playing computer are the main contributing factors to low active participation in physical activity [2]. It causes the body shape to be not ideal (obese), which in turn can result in low endurance when carrying out activities or getting tired too quickly [3].

In addition to obesity, low physical activity directly affects physical fitness. Physical activity and physical fitness are interrelated: physical fitness can only be achieved by doing regular and sufficient physical activity. One must at least carry

out physical activities by fulfilling the principles of physical exercise FITT (frequency, intensity, time, and type) with planned and sufficient arrangements [4]. The simple definition of physical fitness is a measure of "how well one performs physical activity." It can also be further explained as the body movements produced through muscle action that increases energy usage [5]. One's endurance in doing long physical activities and without experiencing fatigue can be taken as a sign of functional physical fitness. Every physical activity is carried out by utilizing muscle activity, which results in increased energy usage.

The benefits of physical fitness for humans have been widely examined, and many of the results of such a study clearly state that physical fitness is an essential factor in achieving a healthy lifetime [6]. There are positive associations of muscular strength, speed agility, and cardiorespiratory fitness with executive function in children with overweight and obesity. In addition to its impact on health, physical fitness has been shown to make a significant contribution to the level of academic achievement (math, English, and social studies) of school-age children; high academic achievement is associated with high physical fitness level [7]. Regarding the source of physical fitness—physical activity, research shows that physical activity is beneficial in several ways: those who have a high level of physical activity is still resistant to asthma even though they live in poor environmental conditions [8], have proper stress management thereby reducing depression levels [9], and is also one of the healthiest and safest ways to maintain a fit psyche [10].

Based on the importance of physical fitness, it is only right that physical fitness becomes one of the main objectives of the PE class in schools and is included in the official school curriculum. By including efforts to fulfill the physical activity adequacy rate of students in the school curriculum, it can help to improve physical fitness [11, 12]. Nevertheless, merely improving student's physical fitness through activities in PE class alone is not enough. Regular and directed additional physical activities outside PE class must be secured [13, 14]. Based on those researches, the core of the implementation of

PE learning in schools should be focused on achieving a sufficient number of the student's daily movement. Thus, enabling students to achieve a high level of physical fitness.

There is a need for a measure as a benchmark in determining the sufficiency of physical activity. The World Health Organization (WHO) has made a recommendation to maintain the physical activity for children aged 5-17 years to be at 60 minutes of MVPA, adults aged over 18 years to be a minimum of 150 minutes MPA or 75 minutes MVPA or other proportionally regulated combination [1]. A school program in Ontario also offers recommendations for schools to carry out PE learning as a support to get students to be active for 60 minutes [15]. The research also discussed DPA recommendations: 30 minutes at least four times a week or between 45-300 minutes a week [16]. Many of these recommendations can be the benchmarks for daily physical activity for adults or as a learning goal for students.

Regulations on how the objective of PE class is implemented in school curricula is quite clear. However, the impact of PE class seems questionable. In Indonesia, the impact of PE on students' physical fitness is still low; only 15% of the total population [17]. Also, the physical fitness of students in Indonesia is still at a poor level. In 2005-2006, no more than 11% of students in Indonesia were in good and excellent physical fitness levels [4]. However, in 2010 the situation got worse, as many as 94% of Indonesian students were in a medium, poor and very poor condition, only 6% of them were in the good and excellent category [18]. Unfortunately, in the following years, there has been no new research on physical fitness nationally, which is a big problem for PE in Indonesia.

Therefore, there is a critical need for action to reform the quality of PE learning to be able to have more impact on the core learning objectives of PE in the school curriculum. This article aims to describe the effect of managing the daily physical activity of the students as an effort to increase it by the use of DPA-Card (daily physical activity card) on physical fitness integrated into learning PE in schools. The management of physical activity using the DPA-Card is an attempt to monitor student's DPA using the self-report method. The goal of this research is for the teacher to find out the adequacy rate of DPA for the students who follow the recommendations. The recommended DPA used is 60 minutes per day. So that if the student's DPA level is found to be less than the recommendation or decreases, the teacher will immediately assign physical activity tasks outside of PE class to increase the number of student participation in physical activity.

A. Physical Fitness

Physical fitness is defined as the body's ability to carry out physical activities without experiencing significant exhaustion and still having energy reserves to do other activities. This is inseparable from the body's metabolism associated with the use of energy sources and oxygen. Physical fitness is defined as the body's ability to carry out strenuous activities without experiencing significant fatigue for a long time [4, 19].

Physical fitness is also expressed as the body's ability to absorb oxygen to the full and utilize it in aerobic metabolism [19]. Maximum oxygen absorption is called the maximum oxygen volume or VO₂Max [4, 19].

Physical fitness can be obtained through physical exercise systematically and progressively. To maintain and improve physical fitness it is necessary to follow the principles of participation during exercise and physical activity, the principles are overload, frequency, intensity, time, specialization, and progression [20]. In addition, physical fitness can be improved through physical exercise done with sufficient frequency, intensity, and time [19, 21]. To improve physical fitness exercise must be carried out systematically, with the right repetition, with proportional, progressive time, and the burden is getting more and more. Based on the explanation above, there is no other way to improve physical fitness than physical activity [4].

For this reason, it can be concluded that physical fitness in terms of the body's ability to consume oxygen to the maximum can be expressed using VO₂Max. The simplest way to find out VO₂Max is to use the Multistage Fitness Test. MFT has proven to be valid and reliable in predicting fitness from the cardiorespiratory side [22].

B. Daily Physical Activity

Physical activity should be a student habit that is expected to be able to become an active living culture. Physical activity can be known by the teacher using the daily physical activity (DPA) card. It is believed that physical activity is positively related to physical fitness, the higher the physical activity of a person, the higher the person's physical fitness will be. For that reason, based on the problems that have been stated above, that students' physical fitness in Indonesia is low, it can be said that their physical activity is also low. This is the responsibility of schools through PJOK students should be able to meet the demands of minimal physical activity to maintain and improve physical fitness.

According to WHO, children aged 5-17 years at least actively move with moderate intensity upwards for 60 minutes with a frequency of at least 3 times a week [1]. This is recommended because it was also found that inactive living habits were included in the list of the ten biggest killers in the world besides cancer, and heart disease. In addition to WHO, the following are cited various recommendations for physical activity complete with duration, frequency, and intensity, as well as the benefits of one's participation in carrying out physical activities on a regular basis (see table 1 [16]).

TABLE I. DIFFERENT RECOMMENDATIONS FOR DOING PHYSICAL ACTIVITY

Organisation/ agency	Year of the recommendation	Minimum length of recommended physical activity	Minimum recommended intensity	Expected beneficial results
Center for Disease Control and Prevention and American College of Sport Medicine	1995	30 min most days of the week	Moderate	General health improvement
Surgeon General's Report on Physical Activity and Health	1996	30 min most days of the week	Moderate	General health improvement
American Collage of Sports Medicine	2001	150 min/week 200/300 min/week	Moderate Moderate	General health improvement Long-term maintenance of weight loss
Institute of Medicine	2002	60 min/day	Moderate	Avoid putting on weight and add other benefits for health independently of weight
International Association for the Study of Obesity	2003	45-60 min/day 60-90 min/day	Moderate Moderate	Prevent transition to overweight or obesity, avoid weight regain.

For this reason, physical activity is very important. PJOK as a vehicle for children to move in school should be maximized to get positive benefits from physical activity. The level of community participation in sports activities is the main key to getting a complete health degree. Individuals who have an active habit of engaging in physical activity can improve health and prevent the onset of diseases including heart disease, type 2 diabetes, and osteoporosis, forms of cancer, obesity, and injury. Many benefits can be achieved by getting used to being involved in physical activity.

Based on the explanation above, physical activity is the key to achieving healthy living through an active lifestyle. The results showed that physical activity can reduce the risk of all causes of death, including reducing the risk of being overweight, reducing symptoms of depression, and improving the quality of life associated with being overweight for a longer period [6, 9]. These results explain that the physical activity carried out regularly and sufficiently can reduce the impact of a person's poor health condition. In order to become a lifestyle, physical activity needs to be familiarized from an early age. The results showed that activity habits at an early age can be predictors of exercise habits and physical activity in adults [23]. For this reason, the promotion of physical activity to school-age children is important so that they have active habits so that they can carry it for life.

II. METHOD

A. Subject

The subjects of this study were grade 5 elementary school students in two different schools in one teacher community in Karang Pilang subdistrict, Surabaya city, East Java province, Indonesia. The control group consisted of 29 students (17 male and 12 female). While the experimental group consisted of 31

students (17 male and 12 female). Two different PE teachers taught the two PE classes.

B. Procedure

1. Pretest. The pretest was done by measuring students' physical fitness. The components used in determining physical fitness are aerobic fitness, muscular strength, muscular endurance, flexibility, and body composition

[7]. It is worth noting that physical fitness referred to in this article is cardiorespiratory fitness [24].

2. Class treatment. The program was given in the form of DPA-Card to measure student's participation in daily physical activity [25]. The student records in the DPA-Card were put into a scoring sheet, which was then analyzed to obtain information about the adequacy of the student's DPA. Data entry on DPA-Card student records was done every day. Furthermore, the analysis of the scoring sheet was evaluated by the teacher and reported to students once a week during PE class. The results of the evaluation by the teacher would then be used to provide students' self-management exercises in order to increase DPA on an ongoing basis. For students who have a low or decreasing DPA, they are called to get a further explanation about their DPA rate. Then, they would get additional assignments in the form of physical activity. PE class was as conducted as required by the curriculum, but traditional game material was taught during the six weeks of research.
3. Class control. Each student was given a self-report form to report their daily physical activity. PE learning was carried out using the traditional game.
4. Posttest. It was carried out in the same manner as the pretest.

C. Instrument

1. Physical fitness. Measurements of physical fitness were performed on cardiorespiratory fitness using the multistage fitness test (MFT), which is reliable to measure children's cardiorespiratory fitness [22].
2. Daily Physical Activity (DPA). DPA-Card developed by Suciati was employed to monitor and assign physical activities to students [25]. The implementation of this program was integrated into the implementation of PE class.

D. Analysis

1. DPA. Analyzed using scoring sheets in the Microsoft Excel program. The statistics used were mean, highest value, and lowest.
2. Physical fitness. It was analyzed using descriptive statistics.

3. Differences and relationships between variables were analyzed using t-tests and ANCOVA.

III. RESULTS AND DISCUSSION

This section will explore three issues: the condition of students' daily physical activity, improvement of physical fitness, and the relationship of differences in treatment, DPA, and increase in physical fitness.

A. Conditions of student's daily physical activity

Daily physical activities reported by students are all types of activities, including moving around, which is the minimum requirement, up to the type of activity that is MVPA. The student reported the amount of activity and duration. The amount of activity consisted of all forms of physical activity that are carried out repeatedly in a day. A student may move a lot even though they only did one type of movement when it was done in many sessions. Thus, the amount of activity could also be defined as a repetition of movement in one day. Meanwhile, duration was the length of time in which students carry out their activities. The results of the analysis of student reports regarding daily physical activity are in table 2.

TABLE II. DAILY PHYSICAL ACTIVITY REPORT

Group	Statistic	Daily Physical Activity	
		Amount of Activity	Duration (minutes)
Treatment	Mean±SD	21.8±9.6	90.2±52.0
Control	Mean±SD	19.9±7.1	87.9±58.1

Students who got treatment on average carry out physical activity in a day as many as 21.8 ± 9.6 movements for 90.2 ± 52.0 minutes. Meanwhile, students in the control group did physical activity as much as 19.9 ± 7.1 movements for 87.9 ± 58.1 minutes a day. Referring to the recommendations by WHO and some of the results of research, the students fell into these conditions [1], [15], [16]: the two groups in this study had sufficient physical activity in the duration criteria for carrying out physical activity. However, based on the average amount and duration of physical activity, the treatment group had a higher magnitude compared to the control group.

B. Increased Physical Fitness

Physical fitness was measured using MFT physical fitness test to determine cardiorespiratory fitness at the pretest and posttest in the form of VO2Max. Data analysis using t-test was carried out to determine the significance of students' physical fitness improvement before and after the treatment. The results of the analysis can be seen in table 3.

TABLE III. IMPROVEMENT OF PHYSICAL FITNESS

Group	Test	Mean	t-test results		
			t	p	Conclusion
Treatment	Pre	23.2	3.22	0.003	pre<post
	Post	24.6			
Control	Pre	23.1	1.03	0.311	pre=post
	Post	23.5			

Changes in VO2Max values occurred from pretest to posttest. The VO2Max value of students in the treatment class at pretest was 23.2 to 24.6 at the posttest. The increase was declared significant ($p < 0.05$). Changes in VO2Max scores also occurred in the VO2Max scores of students in the control class at pretest at 23.1 to 23.5 at the posttest. However, the increase was declared not significant ($p > 0.05$). Providing treatments in the form of physical activity fulfillment guaranteed that students will carry out physical activities independently without teacher supervision. This program is similar to SPARK, which had proven that fulfilling daily physical activity could improve physical fitness [13]. Providing this program can trigger teachers to continue using PE class to move more. Not only that, but the SPARK program was also proven to increase the activeness of students in participating in the class [14]. Other programs that can increase students' physical activity in PE class are SHARP (Stretching while moving; High repetition of motor skills; Accessibility through differentiation; Reducing sitting and standing, and Promoting in-class physical activity) [26]. In essence, if the teacher has a willingness to improve the physical quality of students outside of PE class, it can also have an impact by making PE class activities to become increasingly active. Unfortunately, this research still did not provide comprehensive data related to the quality of PE learning based on students' physical activity in learning.

C. The Relationship Between Differences in Treatments, DPA, and Gain of Physical Fitness

The following are the results of the ANCOVA analysis to find out the relationship of differences in treatments, DPA, and gain of physical fitness.

Based on Ancova result, the corrected model shows that there is a simultaneous effect of the difference in treatment and duration of DPA on the gain of physical fitness, $F(1, 58) = 4.41, p = 0.020$.

TABLE IV. DAILY PHYSICAL ACTIVITY REPORT

Source	F	Sig.	ηp2
Corrected Model	4,41	0,02	0,74
Group differences	3,73	0,06	0,48
Duration of DPA	5,44	0,02	0,63

Dependent Variable: Gain of Physical Fitness

Furthermore, group deferences indicated that group differences did not affect changes in physical fitness ($p > 0.05$). The duration of the DPA variable showed a different result;

there was a significant relationship between the gain of physical fitness and the duration of DPA ($p < 0.05$). The explanation above showed that group differences did not affect changes in physical fitness. Physical activity variables had a significant influence on changes in physical fitness. So, it can be concluded that changes in physical fitness will be achieved by increasing daily physical activity.

IV. CONCLUSION

Various studies have shown that physical fitness contributes to many aspects of life, from health to academic performance. It is a real challenge for PE practitioners always to try to deliver quality PE classes to improve physical fitness through increased physical activity. Physical activity in PE class alone clearly will not improve physical fitness. However, the addition of physical activity outside the learning hours is essential, especially for those who have much free time.

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