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Current Trends In E-Learning

Raj Kumar, Dr. Shaveta Bhatia

E-learning is the buzzword of today's era and a large number of e-learning resources are available in online and offline mode. However, to derive useful pattern from this abundant pool of e-learning resources is a very tedious task. Various data mining approach can be used to generate interesting patterns from this enormous repository. The data analytics helps in analyzing the information access pattern of the users. The information access pattern can be helpful in identifying the learning behavior traits of an individual. Moreover, machine learning along with data mining has opened up new avenues. The combination of data analytics and machine learning may be used to generate targeted recommendations.

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1-3

Precedent Behavioral Extraction System For Personalization Recommendation

Mahima

Hosting a compilation of billions of videos, YouTube presents one of the leading scale and most precious videos personalization recommendation system in existence. The recommendation system works on to personalized set of videos to users based on their past actions on the website. In this paper, we highlight the some of the major challenges that the system faces and how to address them. To tackle these issues, we have proposed a Precedent Behavioral Extraction Module (PBEM), which also deals with large-scale heterogeneous information to fulfill the requirements of the potential users. PBEM approach especially focus on the remarkable performance enhancements brought by machine learning. PBEM is a new approach as it works on discovering the precise web browsing behavior from uncertain keywords and defines the semantic measurement with user recommendation of keywords within the user query

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4-9

Morphological Variation In Pollen Grains Of Philippine Hibiscus Rosa-Sinensis Hybrids

Divine Joy A. Mauhay, Larry V. Padilla, Fe Corazon A. Jacinto, Eileen Z. Vitug

Hybridization of both plants and animals has innumerable benefitted man. An example of which is the numerous hybrids of Hibiscus rosa-sinensis which are primarily used for aesthetic purposes because of their colourful flowers. Phenotypic variations can already be observed in various parts of H.rosa-sinensis because of hybridization; hence, it is likely that modifications are occurring on microscopic structures such as the pollen. Through time, such variations could change the frequencies of alleles in the gene pool and could possibly lead to microevolution of the species. This study focused on the determination of variations in pollen grain morphology of ten (10) selected H. rosa-sinensis hybrids from the Institute of Plant Breeding of the University of the Philippines-Los Banos, specifically in terms of pollen aperture, size, shape, length of spine and sculpturing. The pollen shape, type of aperture and sculpturing were determined qualitatively. One-way ANOVA was employed if there is significant difference among the pollen of the hybrids in terms of the said quantitative characters. Pollen shape variation was determined through Elliptic Fourier Coefficient Analysis. Results showed that all hybrids have pantoporate type of aperture, echinate type of sculpturing, and spheroidal shape. Among the characters observed, variation was noted in their pollen size and spine length. Pollen size ranges from large to very large and long to very long spine length. Majority of the hybrids observed (7 out of 10) have very large pollen size and long pollen spines. One (1) hybrid has very large pollen size

and short spines while two (2) have large pollen size and short pollen spines. There was also significant difference among the samples in terms of these characters based on statistical analysis. The hybrids with variations (Claire Baltazar x Cely Hermosa, Diamond Star and Vicky) cannot be considered outgroups on the basis of the said quantitative characters alone. Nevertheless, such variations observed should not be discounted as a possible modification in pollen morphology in progress as a result of hybridization.

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10-15

A Survey To Detect Financial Fraud Using Deep Learning Approaches

Pooja Singh, Subhash Chandra Jat

The more financial transactions have now emerged throughout the Big Data era, with numerous opportunities, threats and possibility of information theft in the face of possible fraud. This is due to the massive use of electronic paying instruments aimed at stealing confidential information and performing fraudulent transactions by attackers. While smart fraud detection systems have been established to deal with this problem, the imbalances of the data are still associated with some famous problems. This paper uses a fabricated identity to benefit financially or otherwise from identity fraud. When society moves further into a digital economy, the number of fraudulent transactions is increasingly rising. Here the emphasis is on the approaches that use profound learning and timely analysis of existing methods for the detection of payment fraud. The aim of the survey is to regularly benchmark methods for detecting fraud in online transaction volumes for industry. This test demonstrates that, in spite of the study, different methods for detecting fraud have a realistic performance in the industry. The underlying difficulties in applying a deep understanding of fraud are discerned.

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16-20

Influences Of Fuel Injection Pressure On CI Engine Performance And Emission Of Lemon Grass Methyl Ester As Fuel

Dr. R. Velappan, R. Panchamoorthy, Dr. M.L. Sundararajan

The compression ignition engine widely used in industrial and automobile sector, this engine operates by using fossil fuel and emits the harmful emission from engine exhaust the harmful exhaust emission are affected human and environment also. So, reducing exhaust emission researcher are moves in to fuel modification and some engine modification. It causes significantly reduces emission and increasing the performance of engine. The fuel modification is required to CI engine for improving performance. The alternate fuel lemon grass methyl ester is suitable fuel for diesel engine. In order to improve the performance some changes required in the diesel engine, so varying the injection parameter like fuel injection pressure. The fuel injection pressure is one of the most parameter for engine modifications. This investigation is carried out find the optimum injection pressure in the diesel engine by using lemon grass methyl ester. The lemon grass plants sample is collected, dried and powdered. The powdered samples are subjected in to chemical solvent such as N-Hexane. Thus solvent are extracted oil from the sample. The Extracted oil converted in to methyl ester by transesterification process. Thus the lemon grass methyl ester (LGME) is blended with neat diesel in proportion of 20% of LGME and 80% of diesel. The blended LGME are investigate in Kirlosker-AV1 and compared to diesel. The investigation to be carried out in modified fuel injection pressure from 210 bars to 240 bars steps in 10 bars with variable load. According to the results, the performance wise best fuel injection pressure is 240 bar has been obtained for all loads, 240 bar fuel injection pressure gives lower smoke and HC, 210 bar fuel injection pressure shows lower NOX.

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21-25

Aspects Of Student Psychology At The University

Ahmad Muhammad Diponegoro, Meilia Wigati, Suci Putryani, Mu'mina Kurniawati S. J. Kahar, Nurnaningsih, Siti Nur Indasah

This study purpose to understand the issue of happiness college student which is the main theme in the problem. Happiness can be achieved with four criteria, is by being grateful for what is already owned, establishing

relationships with the closest and dearest people, achieving goals according to what is desired, and fulfilling all needs with sufficient material. This writing uses a literature study to set the theoretical foundation and the validity used to refer to several references. Subject in research these are S1 and S2 students with age groups 18-21 (final adolescence years) and age groups of 22-30 adults who number 200 students. The selection of subjects in this study used a non-probability convenience sampling technique, is the process of taking subjects based on ease of access and selection in the area environment.

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26-30

Compact Qca Based Serial-Parallel Multiplier For Signal Processing Applications

Premananda B.S., Bhargav U.K., Kaza Sai Vineeth

Quantum-dot Cellular Automata (QCA) is a promising nanoscale technology with great prospect to provide compact circuits with low energy consumption when compared to CMOS technology. The increasing demand for efficient signal processors necessitates the design of adders and multipliers which occupy less area and consume less power. Serial adders are area efficient architectures that can compute n-bit addition with a single adder but takes more time when compared to n-bit parallel adders. Serial-parallel multipliers have simple, regular and scalable structures in contrast to multipliers that implement more complex multiplication algorithms. This paper proposes two novel energy and area efficient 4-bit QCA based serial-parallel multiplier circuits. Initially a QCA based serial adder is designed and then a 2-bit serial-parallel multiplier is realized. This multiplier is scaled up to form a 4-bit serial-parallel multiplier. A Baugh-Wooley (parallel) multiplier is constructed as a case study to illustrate differences between coplanar and multilayer crossovers in QCA. The design and simulation of the QCA circuits are performed using QCADesigner-E. Circuits are evaluated based on cell count, area and energy dissipation. It can be inferred from the simulation results that the proposed 4-bit serial-parallel multipliers have reduced cell count, area and energy dissipation.

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31-38

Automatic Detection And Classification Of Malignant Tumor In Mammograms Image Using Image Feature Fractal Dimension

Shwetha S.V., Dharmanna L.

Breast cancer is a second largest disease in worldwide and even in India as per the statistics of world health organization after the lung cancer. The conventional approach to identify the breast cancer is biopsy, it takes on an average of more than week together time and most of the hospitals do not have this facility to perform the biopsy. This approach also demands expertise in the domain of analysis of tumor tissues to identify the cancerous cell. Hence to overcome the drawbacks of the conventional diagnosis system. In this paper a novel approach has been presented to diagnose the breast cancer by analyzing X-ray mammograms by a technique called rotational contour based fractal dimension with an interval of 60 degree. In this paper, the work is categorized into four phases, (1). Enhancing the mammogram images using Gabor filter and also estimated PSNR before and after the enhancement of the mammogram images that leads to accurate segmentation of tumor from the mammogram. (2). The automatic segmentation of region of the tumor through watershed and morphological operations and also obtained the contour of the tumor. (3). The contour analysis has been performed using a new approach called contour based fractal dimension approach that gives excellent classification result for the benign and malignant tumor. The Fractal Dimension for benign tumor ranges from 1.462 to 1.71 where as for malignant tumor the FD ranges from 1.78 to 3.78. And the Standard Deviation for benign tumor 0.06 and for malignant is 0.58. (4). In classification phase the automatically identifying and segregating the cancer disease. In this work, consider huge set of images from publicly available popular databases such as Digital Datagram Screening Mammogram, MIAS and also considered for the images available in the SDM hospital, Ujire and Dharwad etc. This approach gives almost 100 percent accuracy. Hence this technique can be considered as diagnostic parameter for the identification and classification of disease which serves the oncologist to take better decision.

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796-802

The Main Aspects Of Assessing The Quality Of Drinking Water For The Population (On The Example Of The Tupolang Reservoir)

Bekmamadova, Gulnoza Akmalovna

This article explores the issue of assessing the quality of drinking water for the population, developing effective solutions to provide the population with quality drinking water, especially in small towns and villages. In this connection, the scientific works of scientists on the process of accumulation of pollution in reservoirs and their treatment are analyzed. In order to study and improve methods for assessing water quality, the Tupolang reservoir was studied for compliance with the requirements of state standards, hygienic and technical conditions for industrial spills and bottling of water for drinking needs of the population. For this study, water samples were taken from the Tupolang reservoir to study it in the summer and winter season and recommendations were developed for its improvement.

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803-808

The Effect Of Job Proficiency, Commitment, And Cooperative Relationship To Project Performance

Siti Haerani

Contractor selection is very important to ensure work can be done on time, on budget, and meet the quality. This research aims to analyze and understand in depth the effect of job proficiency, commitment, and cooperative relationship to project performance. PT. Vale is one of the mining companies located in Sorowako, Indonesia, where the research was conducted. The data needed is obtained from a sample of employees who are specifically involved in handling the procurement of construction services. The technique of collecting data using questionnaires and documentation. These data are analyzed using the Multiple Linear Regression tool with the SPSS Program software application. The research findings show that the variables of job proficiency, commitment, and cooperative relationship simultaneously significantly affect the performance of the project with the coefficient of determination R^2 of 0.565. Cooperative relationship partially has no significant effect to project performance while job proficiency and commitment partially has significant and positive effect to project performance. Job proficiency consist of five indicators which are availability of qualified personnel, appropriate equipment, Health, Safety and Environmental management, financial capacity to finance the project, and project management capabilities. Commitment consist of two indicators which are contractor's loyalty to the Owner, and the willingness of the contractor to change the work method for better job result. Cooperative relationship consist of three indicators which are the contractor has ever did similar project on the Owner, the contractor has never been legally disputed with the owner, and the contractor does not have a poor track record of the other project owners. The novelty of this study lies not only in the main variables used in predicting project performance, but also on indicators of each variable. The object of this research is also different, where this study focuses on constructive projects while previous research generally uses a variety of projects. The findings of this study are very useful as a basis for consideration in selecting prospective contractors who will be given the task of working on the project more successfully.

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809-814

Behaviors Of Engineering Students Toward Asean Economic Community

Syaiful Haq, Ambiyar, Nurhasan Syah, Junil Ardi

This study aims to reveal the behaviors of Engineering students toward the ASEAN Economic Community (AEC). This research was conducted in Engineering student in Universitas Negeri Padang with a quantitative descriptive research. This research used a total sampling technique. The research procedure was carried out by distributing questionnaires to 84 active students of Engineering who had attended the Seminar on AEC. The results showed that the behavior of Engineering students towards AEC was 75.1% or included in both categories. This value shows that Engineering students have tried to prepare themselves to face AEC starting from the high level of knowledge about AEC 76.6% and their attitude towards AEC 78.83%. There are concerns that they will face the AEC, and lead to several behaviors that are more active in learning, add reading material in broadening horizons, improve the ability of hard skills and soft skills, start to join organizations, learn the cultures of other nations around ASEAN, and to take foreign language courses to make it easier to face AEC.

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815-818

Developing Connection, Application, Reflection, Extension (Care) Learning Model IN Junior High School Science Learning

Khairul Anwar, Suratno, WachjuSubchan

Connection, Application, Reflection, Extension (CARE) learning model is a learning model developed by integrating inquiry learning model and accelerated learning into one combining the strengths and weaknesses of each model. This study aims to: 1) find out the validity of CARE learning model, 2) know the practicality of CARE learning model, 3) find out the effectiveness of CARE learning model. This research is a research development using the stages of development research from Borg & Gall (1983) research stages, namely: (1) research and information collecting, (2) planning, (3) developing preliminary forms of product, (4) preliminary field testing, (5) main product revision, (6) main field testing, (7) operational product revision, (8) operational field testing, (9) final product revision, and (10) dissemination and implementation. Qualitative and quantitative descriptive analysis is used during this research. The validity test results showed the average percentage of product validity reached 93.39% with a very valid category. The results of the effectiveness test on the small group and large group test respectively on the learning outcomes in the aspects of knowledge have a Normalized gain (N-gain) value of 0.61 (moderate) and 0.71 (high) in the aspects of attitudes reaching an average of 87.5% (very good) and 88.9% very good in the aspects of the process skills reached an average of 62.5% (sufficient) and 94.7% (very good) in the aspects of the product skills reached an average of 83.35% (good) and 86.35% (very good), the average response of student responses has a value of 79.89% (strongly agree) and 87.52% (strongly agree). The practicality test results at each stage of the small group test, large group test and feasibility test are: 90, 60%, 95, 50% and 91, 00% with the category as very well implemented. The description of the results of the study above shows that the CARE learning model (Connection, Application, Reflection, Extension) meets the criteria as a product of development that is valid, practical and effective.

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Strategic Flexibility And Its Impacts On Human Resources

Al-Sarayreh Aktham, Mousa Ayoub, Almadhoun Rasha, Allozi Marah

the present study highlights the importance of strategic flexibility and its role in the human resources of the Organization. It aims to recognize the strategic flexibility role and its variables (information flexibility, flexibility of service delivery) on human resources in educational organizations. Findings of this study shows that the Strategic flexibility dimensions (Information Flexibility and Flexibility in Service Delivery) explain about 59.6% of the variance on Human Resources variable. Moreover, the Strategic flexibility dimensions are significantly affecting in the Human Resources ($P=0.000$). As a conclusion; there is a correlation between Strategic flexibility dimensions and Human Resources, and on this basis the main hypotheses and sub-hypotheses included in the research have been accepted.

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Secured And Sustainable E-Governance: Hedging The Risk By Cybersecurity

Bhubaneswari Bisoyi, Biswajit Nayak, Biswajit Das

In the present scenario, it has become very challenging to mend the relationship within a community. Therefore, the government has taken controlling steps through e-governance. By introducing stringent rule and regulation for controlling the circulation of data and securing it under the e-governance. The research methodology used in this research paper is based on a content analysis of secondary data. This research paper focuses on the best practices followed for the security of information and different models of e-governance. This paper also highlights the security technologies that protect the data from being used wrongly. The security technology that protects from abnormal activities and provides authentication has also been discussed in this research paper. The essential factors for developing strong cybersecurity is to have an immune infrastructure that shall provide better security against threat and cyberattacks. This paper also focuses on the classification of the user's communities for e-governance and the steps taken by each community for hedging against cyberattacks.

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[IJSTR Terms and Conditions](#)**Long Walk To Quality Improvement: Investigating Factors Causing Low English Proficiency Among Indonesian Efl Students**

Zidni Maruf, Alifa Sandra Rahmawati, Eka Siswantara, Didik Murwantono

Indonesian students have learned English for many years from elementary to university. However, English proficiency among most Indonesian students is not improved significantly. Therefore, this qualitative research with case study approach aims to find out factors causing low English proficiency among Indonesian university students. There were six heterogeneous participants coming from all over Indonesia in this research that the researchers got through purposive sampling. The data were collected mainly through individual interview. All interview data were recorded, transcribed, analyzed, and divided into themes. To develop the trustworthiness of the research, the researcher did member checking. The findings show that there were two major factors causing Indonesian university students have low English proficiency namely internal and external factors. Internal factors consist of low motivation and learning anxiety, and external factors consist of inappropriate teaching method, class size, and poor English environment. Further, suggestions and recommendations are offered to all related parties.

[\[View Full Paper\]](#) [\[Download\]](#) [\[References\]](#)**7260-7265****Innovative Advancement In Drone Technology For Water Sample Collections - A Review**

Himanshu Kumbhare , Sagar Shelare

Over the decade, advancement and improvement in drone innovation have been increases rapidly. Drones are retrieved in various significant applications in India using their payloads like the development of drone-based technologies in agriculture and medical sectors. Like the future progressions, the foremost unique is the possible fortune to regain chemical, physical, plus genetic information of oceanic situations like gathering water samples from open water bodies. In this paper, the advancement of drones having the capacity like the drone-based sampling water payloads to trap water from water bodies has been reviewed. Still, drone-based water sampling has several critical limits considering the limited amount of water sample and a low sampling rate. Of critical importance, the apparent conflicts are seen in water parameters got utilising drone-based and conventional water sampling methods. Thus, water samples got utilising drones may not give a degree of quality and exactness to address the issues of water sampling programs. Arrangements planned for tending to these boundaries of drones to carry water sampling including modified drones for higher payload capability, simplifying an arrest of more significant amounts of water, arranging fieldwork for activity past observable visual sight, including combining sustainable analytical investigation designs. Also, complete cost investigations are needed if drones would appearing in the economic profit underwater sampling, and it acts as an economically efficient promoting means if these types of constraints are spouted in the coming years.

[\[View Full Paper\]](#) [\[Download\]](#) [\[References\]](#)**7266-7269****Optimization Of Battery - Ultracapacitor For Electrically Operated Vehicle For Urban Driving Cycle In India**

V L Kokate, R M Holmukhe, D S Bankar, P B Karandikar, Poorva Aparaj

Depleting fossil fuels will be a major challenge in front of coming generation. This is going to hit the transportation sector heavily. Compressed air vehicles and electric vehicles are seen as viable solution for future transportation. Electric vehicle system can be implemented from small vehicle to very large transportation system like train or aeroplane. Use of ultracapacitor is inevitable in most of the electrically operated vehicle as it is the only way to supply pulse current requirement of electric motor. Electrical energy storage is as persistent problem in electric vehicle. Battery has its limitations. Use of battery- ultracapacitor combination is most viable option. Optimization of battery- ultracapacitor rating is addressed in this paper.

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7270-7274

Radiometric Measurement Of Iodine-131 Activity In Liquid Effluent From A Nigerian Hospital

Nasir Badamasi Muhammad, Abiodun Ayodeji, Ngbede Junior Awodi, Justina Onyinyechukwu Adibeli, Mathew Ademola Jayeola

This work measures the radiological content of liquid effluent discharged from a Nigerian Hospital that has a Department of Nuclear Medicine where diagnostic and therapeutic activities were carried out using medical radioisotopes. The main focus is to examine the management of radioactive biological waste from patients after undergoing radio-iodine therapy. This study was carried out for a period of 5 days. Samples of liquid effluent at the point of final discharge from the Hospital into the Municipal sewer system were collected on daily basis, within the hour after radioactive urine waste was discharged into the hospital sewer system. A G.M Tube detector was used in measuring the mean dose rates directly from the liquid effluent samples. The dose rates measured from the liquid effluent samples range from 0.13 to 0.20 μ Sv/hr which was within similar range as the mean dose rate (0.20 μ Sv/hr) from natural background radiation measured prior to the study at locations upstream of the hospital. Corresponding activity concentrations of Iodine-131 were evaluated using empirical correlations. The values of activity concentration ranged from 0.0028 to 0.0043 Bq/L. This showed that the activity concentration of Iodine-131 contained in the liquid effluent discharged was very low when compared with the threshold of 0.1 Bq/L. This is adduced to very high dilution (99.91%) of Iodine-131 within the hospital sewer before being discharged into the Municipal sewer system. Radiation hazard indices were also evaluated to determine the radiological burden of the effluent discharge on the surrounding. Annual Effective Dose Equivalent and Excess Life Cancer Risk values of 15.94 - 24.53 μ Sv/yr and 0.14×10^{-3} - 0.20×10^{-3} were within the acceptable standard Thresholds of 70 μ Sv/yr and 0.29×10^{-3} respectively. The low values of radiological properties measured for Iodine-131 in the liquid effluent discharged from the Nigerian Hospital are within acceptable clearance level for safe final discharge.

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7275-7283

Developing Connection, Application, Reflection, Extension (Care) Learning Model IN Junior High School Science Learning

Khairul Anwar, Suratno, WachjuSubchan

Abstract: Connection, Application, Reflection, Extension (CARE) learning model is a learning model developed by integrating inquiry learning model and accelerated learning into one combining the strengths and weaknesses of each model. This study aims to: 1) find out the validity of CARE learning model, 2) know the practicality of CARE learning model, 3) find out the effectiveness of CARE learning model. This research is a research development using the stages of development research from Borg & Gall (1983) research stages, namely: (1) research and information collecting, (2) planning, (3) developing preliminary forms of product, (4) preliminary field testing, (5) main product revision, (6) main field testing, (7) operational product revision, (8) operational field testing, (9) final product revision, and (10) dissemination and implementation. Qualitative and quantitative descriptive analysis is used during this research. The validity test results showed the average percentage of product validity reached 93.39% with a very valid category. The results of the effectiveness test on the small group and large group test respectively on the learning outcomes in the aspects of knowledge have a Normalized gain (N-gain) value of 0.61 (moderate) and 0.71 (high) in the aspects of attitudes reaching an average of 87.5% (very good) and 88.9% very good in the aspects of the process skills reached an average of 62.5% (sufficient) and 94.7% (very good) in the aspects of the product skills reached an average of 83.35% (good) and 86.35% (very good), the average response of student responses has a value of 79.89% (strongly agree) and 87.52% (strongly agree). The practicality test results at each stage of the small group test, large group test and feasibility test are: 90, 60%, 95, 50% and 91, 00% with the category as very well implemented. The description of the results of the study above shows that the CARE learning model (Connection, Application, Reflection, Extension) meets the criteria as a product of development that is valid, practical and effective.

Key Words: CARE Learning Model, Learning, Science

1. INTRODUCTION

The 2013 curriculum in the implementation of the learning process requires a balance between aspects of knowledge, attitudes and skills. The learning process initially focused on exploration, elaboration and confirmation enhanced by learning that was held interactively, inspiratively, fun, challenging, motivating students, to actively participate, as well as providing sufficient space for initiative, creativity and independence in accordance with their talents, interests and developments physical and psychological learners[6]. Learning that initially focused on student cognitive learning outcomes today emphasizes how the learning process is meaningful for students. The learning process is designed with an orientation on achieving competence and focusing on students (student centered learning). Learning does not only focus on results, but the process [11]. Those 2013 curriculum development demands apply to all subjects including science subjects. The learning process of Sciences refers to the general guidelines for learning the Ministry of Education and Culture Republic of Indonesia No. 103 of 2014, in which the principle of learning activities are processes that provide opportunities for students to develop their potential in the attitudes, knowledge, and skills needed by themselves for life and for society, nation and and contribute to the welfare of human life.

Learning activities are directed to empower all potential learners to achieve the expected competencies. In the learning process, students are encouraged to find information, check new information, link new information with existing knowledge in their memories, and develop it into information or abilities that are appropriate to the environment, place and time of their life[6]. The fact that is often found in schools is that students are accustomed to learning only in the low cognitive domain (Silberman, 2001: 3). Teacher-centered learning patterns are sometimes still found in the learning process, resulting the learning becomes unattractive and dominated by teachers [3]. The learning process that is dominated by the teacher does not provide access for students to develop independently through discovery in their thought processes, and this affects the absorption or learning outcomes of concern [1]. The learning model that emphasizes student activities in the learning process and makes the teacher a guide is defined as the inquiry learning model [7]. The inquiry learning model according to [5] is one of a series of learning activities aimed at all students to search and use systematic, critical, logical and analytical so that students can formulate their own findings with confidence. The objectives to be achieved in learning by using the inquiry model are not only mastery of concepts, but also the process of achieving mastery of knowledge and skills that can provide provisions for students on their adventure journey. According to Dedi et al. (2015: 304), the weaknesses of inquiry learning are the difficulty for learners to understand the learning material without the basis of knowledge and it requires a long time to become independent learners who seek and process information independently. The accelerated learning model (AL) as a learning model can fully arouse the learning abilities of learners, make learning fun and satisfying for them and contribute fully to their intelligence, competence and success as human beings [10]. The accelerated learning model is a learning model that wants students to

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experience joy in learning. The joy is in the form of the rise of students' interest in learning, full involvement of students and making learning carried out meaningful. Meier [8], states "Accelerated Learning" is natural learning, which is based on how people learn naturally ". Learning involves the whole body, mind, and all of us by interacting directly with others and with the world. The combination of the Accelerated Learning (AL) learning model by integrating the syntax of the AL model and the Inquiry learning model is expected to provide a maximum learning experience to students. With the AL model can reduce the weakness of the inquiry model, it can make the learning process is more directed in finding concepts while through the AL model, it can provide motivation and provide initial concepts before students conduct investigations. Integrating the Inquiry model syntax and the AL model allows building self concepts by connecting real problems in daily life with student learning experiences, before students conduct an investigation. Furthermore, follow up activity with the syntax of Trigering Your Memory is done to make it easier for students to remember the concepts obtained from the results of the investigation. From the advantages of the two models, a new model is developed, namely CARE (Connection, Application, Reflection, Extension) by combining the advantages of the two syntaxes of the model. The development of CARE learning aims to create constructivist and humanistic learning. Students can learn in a scientific and collaborative environment. The combination of the two learning models is expected to be suitable for application in the 2013 competency-based curriculum and change the learning paradigm from teacher centered to student centered. Internal and external learning factors can be managed properly. In addition, the students can improve their overall learning outcomes. The aim to be achieved in this research is to analyze CARE learning models that are valid, effective and practical.

2. METHOD

This type of research is Research Development (R&D) that produces CARE (Connection, Application, Reflection, Extension) learning model. This development research refers to the development model of Borg and Gall (1983) which consists of ten steps, namely: research and information collecting (research and data collection), planning (preparing research plans), developing preliminary forms of product (developing product drafts), preliminary field testing (main field trial), main product revision (revising the results of the trial), main field testing (operational trial), operational product revision (refining the product from the field trial), operational field testing (final implementation), final product revision (improvement of the final product), and dissemination and implementation (dissemination and implementation). The research subjects were the students of SMP Negeri 3 Situbondo Class IX 2019-2020 Academic Year. The research instrument used to obtain the validity of CARE learning model data consisted of the validation sheet of CARE learning models by experts (Lecturer at Jember University), CARE learning model validation sheets by users (teachers), syllabus validation sheets, teaching plan (RPP) validation sheets. An additional research instrument is also used in the form of a student response questionnaire and an observation sheet of the implementation of learning to obtain practicality data and the effectiveness of the

CARE learning model when it was used in classroom learning activities. The validity and response data of the students as well as the observation sheet of the implementation of learning were changed in the form of a percentage then converted into descriptive qualitative data using the assessment criteria described in Table 1. In addition, qualitative data were obtained from the percentage of each point in the student response questionnaire and the observation sheet of the implementation of the learning in implementing CARE learning models in class.

TABLE 1.
CARE Learning Model Development Product Validity Criteria

Percentage (%)	Category	Decision
$81,25 \leq x \leq 100$	Very Valid	Products are ready to be used in the real field for learning activities
$62,50 \leq x < 81,25$	Valid	The product can be developed more by adding something that is lacking, making certain considerations, the additions made are not too large and not basic
$43,75 \leq x < 62,50$	Less Valid	Revise by re examining carefully and looking for weaknesses
$25,00 \leq x < 43,75$	Invalid	Revise the contents of the product massively and fundamentally

3.RESULT

This research is a development research that produces a product in the form of a new learning model that is the learning model CARE (Connection, Application, Reflection, Extension) with reference to the research model development of BORg and Gall (1983). The stages of learning activities in the CARE learning model are a combination of the strengths and weaknesses of the inquiry learning model and accelerated learning (AL). The syntax of CARE learning model which is a combination of inquiry and AL learning models can be seen in Table 2.

Table 2.
The combination of inquiry model and AL model

Inquiry Model Syntax	AL Model Syntax	CARE Model Syntax
Step 1 Formulating questions	Step 1 Mind (Mind Motivation)	Step 1 Linking problems in learning with real problems(Connection)
Step 2 Planning	Step 2 Acquiring (obtaining information)	Step 2 Carrying out an investigation(Aplication)
Step 3 Gathering and analyzing	Step 3 Searching out (investigating the meaning)	

data		
Step 4 Drawing a conclusion	Step 4 Triggering (Triggering the memory)	Step 3 Mindmap making (Reflection)
Step 5 Application and Follow Up	Step 5 Exhibiting	
	Step 6 Reflecting	Step 4 Making conclusions and follow up action (Extension)

A description of the steps of the CARE learning model can be explained in Table 3.

Table 3.
CARE Learning Model Syntax

Syntactic	Teacher Activity	Student Activity
Step 1 Connecti on	Motivating students by presenting real-life problems through questions / pictures / videos.	Observing, answering questions, and finding problems related to real life. Formulating questions to solve problems and hypotheses based on students' initial knowledge through the initial concept sheet.
Step 2 Aplicatio n	Guiding the student's activities while assessing student activities.	planning investigations collaboratively and collecting data and then interpreting them.
Step 3 Reflectio n	Facilitating discussion and helping students to create mindmaps.	Communicating the results Making note of important things in the form of mindmaps.
Step 4 Extensio n	Facilitating and providing reinforcement as a follow-up to learning process.	Drawing conclusions and follow up action individually

In accordance with the statement of Joyce, et al. that each learning model must have characteristics of learning model, then the characteristics of the CARE learning model are explained as follows:

1. Social System

Implementing the CARE learning model requires collaboration in finding concepts. Some interactions that reflect the social system in CARE learning include the formation of student groups, investigations, class discussions. Learners are invited to conduct joint investigations, work together and respect each other's opinions during class discussion activities, and the teacher controls the class so that an effective learning atmosphere is created

2. Reaction Principle

The teacher's task in implementing the CARE learning model is as a learning facilitator in formulating problems and determining hypotheses. The teacher's task is to direct students in the investigation activities. If in these activities the students have difficulty, the teacher can guide them by providing examples or illustrations related to the problem or investigation activity. Not only that, the teacher's tasks in this model are also to organize the students to discuss the results of the investigation of the problems or

experimental activities they have made, monitor students when students and group members present the results of the discussion in front of the class and the teacher clarifies the material that has been delivered by the group.

3. Support System

The support system for implementing this CARE learning model is that the teacher must provide media in the form of images, videos or PPT containing images related to the problem that will be discussed, student worksheet for investigative activities, LCD Projector to display picture illustrations or video will be presented in front of the class. The tools and materials needed are listed in the RPP (Learning Implementation Plan).

4. Instructional Effect

The instructional effect of CARE's learning model is that students can find concepts through their own discoveries. Besides, another the instructional effects that can emerge is the increase in student learning outcomes that include cognitive, affective, and psychomotor aspects.

5. Additional Effect

The additional effect expected by CARE's learning model is the increase of students' enthusiasm for research, increased understanding of concepts, increased ability to design investigations, and better collaboration skills. These attitudes or skills are included in the indicators of student activity observation instruments to identify and measure the impact of the accompaniment developed in this model. The product of this development research, which is in the form of CARE learning models, are said to be feasible and of high quality if the learning models are valid, practical and effective (Arends, 2008). The process of developing the CARE learning model used several instruments to obtain data about the validity of the model. The instrument used in the development of CARE learning models is first validated by validator. The results of instrument validation can be seen in Table 4.

Table 4.

Research Instrument Validation Results			
No	Research Instrument	Validation Result (%)	Category
1	CARE learning model guidebook	82,50	Very Valid
2	CARE learning model set	90,00	Very Valid
	Average	86,25	Very Valid

The validation results show that all instruments are 86.25% with a very valid category, therefore all instruments can be used for the next stage, namely product validation by expert validators and user validators. The validation of the learning model is an effort to obtain a learning model with high validity (Akbar, 2013). CARE learning model validation was done by determining the validity of the learning model development set that have been produced, which include the Learning Model Guidebook, Syllabus, Learning Lesson Plan (RPP), Student Response Questionnaire and Observation Observation Sheet. The validity of the CARE learning model was obtained from the results of the validation of two expert validators and three user validators.

The results of CARE learning model validation can be seen in Table 5.

Table 5.
CARE Learning Model Book and Learning Set Validation Results

No	Variable	Expert Validation Result		User Validation Result	
		Average Percentage (%)	Criteria	Average Percentage (%)	Criteria
1	CARE Learning Model Guidebook	88,36	Very Valid	94,30	Very Valid
2	Syllabus	94,44	Very Valid	97,20	Very Valid
3	Lesson Plan	92,00	Very Valid	93,50	Very Valid

Based on Table 5 about the results of the validation of CARE learning model books by experts, it shows the validation results of 88.36% with a very valid category and further strengthened with the results of user validation showing the results of the validation of 94.30% with a very valid category. The average validation results by experts and users of the syllabus are 95.80% with a very valid

category. The average validation results by experts and users of the lesson plan are 93.08% with a very valid category. Referring to the criteria, this figure shows that the CARE model developed is in good category and can be used. Furthermore, the model developed was tested on a small scale according to the development steps of Borg and Gall. CARE learning models that have been valid are then tested in the learning process in class. The CARE learning model test was carried out in two stages, namely the small group test and the large group test. The second phase of the model test was conducted in class IX of SMP Negeri 3 Situbondo. In the small group test 9 students were used. Model testing at the large group test stage involved all students in class IX-H. The CARE learning model trial aims to see the practicality and effectiveness of the CARE learning model. In the small group test and large group test the data obtained is about the improvement of learning outcomes aspects of knowledge, aspects of attitude and aspects of skills. The data on improving learning outcomes aspects of knowledge after learning activities using CARE learning models can be seen in Table 6.

Table 6.
Learning Outcomes (Aspect of knowledge)

No	Learning Outcome	Small group test		Large group test	
		N-gain	Category	N-gain	Category
1	Cycle 1	0,30	low	0,55	average
2	Cycle 2	0,61	average	0,71	high

The data in Table 6 shows consecutive N-gains as follows; In the small group test, in cycle 1, the value of N-gain is 0.3 which is in the low category, in cycle 2, the value of the N-gain is 0.61, which is in the medium category. In the large group test, in cycle 1, the value of N-gain is 0.55, which is in the medium category, in cycle 2, the value of N-gain is 0.71, which is in the high category. The data above shows that there was an increase in the N-gain value consistently in small-scale trials of cycle 1 and cycle 2. Likewise, in large-

scale trials, there was also an increase in N-gain from cycle 1 and cycle 2. This is in line with the results of Ramsey (1995) which shows that there has been a change in science learning than before and requires problems that are integrated with the environment. Improved learning outcomes also occur in aspect of attitude and aspect of skill shown in Table 7. and Table 8.

Table 7.
Learning Outcomes (Aspect of attitude)

No	Learning Outcome	Small group test		Large group test	
		Average	Category	Average	Category
1	Cycle 1	88,9	Very Good	86,10	Very Good
2	Cycle 2	86,1	Very Good	91,70	Very Good

Table 8.
Learning Outcomes (Aspect of skill)

No	Learning Outcome Skill	Small group test		Large group test		
		Average	Category	Average	Category	
1	Process	Cycle 1	56,8	Fair	91,5	Very Good
		Cycle 2	67,9	Fair	85,9	Good
3	Product	Cycle 1	82,7	Good	97,9	Very Good
		Cycle 2	84,0	Good	86,8	Good

The data in Table 7 and Table 8 shows that CARE learning model is able to increase student activity in learning in the excellent category during the small group or large group test. This is shown by the data when testing small groups learning outcomes in the aspect of attitude in cycle 1: 88.9%, in cycle 2: 86.1%, learning outcomes in the aspect of the process skills in cycle 1: 56.8%, in cycle 2: 67.9%, product skill in cycle1: 82.7%, in cycle 2: 84.0%, while the results in large groups are the results of learning attitude aspect in the cycle 1: 86.1%, in cycle 2: 91.7%, learning outcomes in aspect of the process skills in cycle 1: 91, 5%, in cycle 2: 85.9%, in the aspect of product skill in cycle 1: 97.9%, in cycle 2: 84.0%. In addition to the learning outcomes, the effectiveness of the CARE learning model can also be seen from the results of the questionnaire students' responses to the CARE learning model shown in Table 9.

Table 9.
Student Response Data

No	Learning Outcome	Small group test		Large group test	
		Average	Category	Average	Category
1	Interest in learning	84,17%	Strongly Agree	88,17%	Strongly Agree
2	Usefulness in learning	80,50%	Strongly Agree	86,89%	Strongly Agree
3	Interest in learning the next chapter	75,00%	Strongly Agree	87,50%	Strongly Agree
		Average	79,89%	Strongly Agree	87,52%

The data in Table 9 is about student responses to the CARE learning model in the small group test. It shows that the mean value of student responses to the CARE learning

model is 79.89% with the category of strongly agree, in the large group test 87.52% with the category of strongly agree. This shows that the implementation of CARE learning models can generate interest, motivation and enthusiasm, and great interest in learning. The product can be concluded practical if the practitioner states that theoretically the product can be applied in the field and the level of product performance is in good category (Nieven, 1999). To find out the practicality of the learning model, the data obtained from observation of the CARE learning model implementation can be shown in table 10.

Table 10. Learning Implementation Data

No		Average	Category
1	Small Group Test	90,60%	Well Implemented
2	Large Group Test	95,50 %	Very Well Implemented
3	Feasibility Test	91,00%	Very Well Implemented

The data in Table 10, which is about the learning implementation in the small group test, shows that the average score obtained from observations by the two observers on the implementation of the learning model is 90.60%, while in the large group test is 95.50%, and the result of the feasibility test shows 91.00%. This means that all indicators of implementation including pre-activity, whilst-activity, and post-activity are very well implemented. From the description above, it can be concluded that CARE's learning model meets the practicality criteria of an educational development product or it can be said to be a practical model in junior high school science learning because it is easy to apply in the field with the level of very well implemented. This is in line with the opinion of Sutikno [13] which says that effective learning is a learning that allows students to learn easily, fun and can achieve learning objectives in accordance with expectations.

4. CONCLUSION

Based on the research results and discussion described above, it can be concluded that the CARE learning model (Connection, Application, Reflection, Extention) is valid to be used in learning activities. It is supported by a validity value of 88.36% and positive responses from students during the implementation of the learning model. CARE learning model consists of 4 stages, namely formulating problems and making hypotheses, designing investigation and conducting investigation, presenting results and writing concepts to a mindmap, and making conclusions and follow-up action.

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