

State University of Makassar

**INTERNATIONAL CONFERENCE ON MATHEMATICS,
SCIENCES, TECHNOLOGY, EDUCATION
AND THEIR APPLICATIONS**

*"Recent Research and Issues in
Mathematics, Sciences, Technology, Education
and their Applications"*

PROCEEDINGS

IGMSTEA 2014

Makassar, August 20-21, 2014

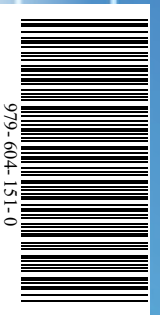


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**Faculty of Mathematics and Science
State University of Makassar**

ICMSTEA 2014: RECENT RESEARCH AND ISSUES ON MATHEMATICS,
SCIENCE, TECHNOLOGY, EDUCATION AND THEIR APPLICATIONS

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Preface

All praise to Allah SWT, because His mercy and blessings, the proceedings of the "International Conference on Recent Research and Issues in Mathematics, Sciences, Technology, Education and Their Applications (ICMSTEA) 2014" is now finally in our hands. ICMSTEA 2014 was successfully held at Phinisi Building, State University of Makassar on 20th – 21st August, 2014 and followed 149 parallel speakers and around, around 450 participants in total that registered and participated from many universities in Indonesia and abroad. It is assigned to celebrate the 53rd commemoration of State University of Makassar. The conference is organized by the Faculty of Mathematics and Science in conjunction with several committee members from the other faculties within State University of Makassar.

These proceedings are divided into two volumes, the first volume contains all the papers in the field of mathematics education, science education and its applications, and the second volume contains all the papers in the fields of mathematics, science and its applications. We hope that everything contained in these proceedings will expand scientific insights while providing new research ideas and innovations to the conference participants and the reader.

We would like to thank to the authors for contributing their papers, and the reviewers who have provided assessment and feedback during the editing process. We also would like to thank to those who have helped the settlement of this proceedings.

We apologize if there are any mistakes in these proceedings. We also would like to express my highest appreciation to the sponsors who have contributed to the successful implementation of ICMSTEA 2014 conference and the publication of these proceedings.

Editor Team

Forewords from the Head of Committee

Assalamu'alaikum Warahmatullahi Wabarakatuh.
Good morning and may God's blessings be upon us all.

Your Excellency the Rector of State University of Makassar (UNM) Prof. Dr. H. Arismunandar, M.Pd. Ladies and gentlemen, on behalf of the conference committee, first, I would like to give our welcome to all the delegates, keynote speakers, invited speakers, parallel speakers and participants coming today. Welcome to the conference, welcome to State University of Makassar, and welcome to Makassar.

This conference entitled "*International Conference on Recent Research and Issues in Mathematics, Sciences, Technology, Education and Their Applications (ICMSTEA) 2014*". It is assigned to celebrate the 53rd commemoration of State University of Makassar. The conference is organized by the Faculty of Mathematics and Science in conjunction with several committee members from other faculties within State University of Makassar.

Ladies and gentlemen, the conference proudly invites eleven keynote speakers coming from several countries. Therefore, I would like to express my sincere thanks to the keynote speakers, including:

1. Professor Max Warshauer (Texas State University, USA)
2. Professor Naoki Sato (Kyoto University, Japan)
3. Professor Peter Hubber (Deakin University, Australia)
4. Professor Susie Groves (Deakin University, Australia)
5. Dr. Frans van Galen (Utrecht University, Netherlands)
6. Professor Duangjai Nacapricha (Mahidol University, Thailand)
7. Professor Baharuddin bin Aris (Universiti Teknologi Malaysia, Malaysia)
8. Professor Suratman Woro Suprodjo (Gadjah Mada University, Indonesia)
9. Professor Ismail bin Kailani (Universiti Teknologi Malaysia, Malaysia)
10. Professor Muhammad Arif Tiro (State University of Makassar)
11. Dr. Siti Nuramaliati Prijono (The Indonesian Institute of Sciences)

I would like also to give sincere thanks and gratitude to the invited speakers, including:

1. Prof. Dr. H. Arismunandar, M.Pd. (State University of Makassar)
2. Prof. Kristian H. Sugiyarto, Ph.D. (State University of Yogyakarta)
3. Prof. Dr. Sutarto Hadi (Lambung Mangkurat University)
4. Dr. Nurdin Noni, M.Hum. (State University of Makassar)
5. Dr. Yuni Sri Rahayu, M.Si. (State University of Surabaya)
6. Dr. Ayuddin M.T. (State University of Gorontalo)
7. Dr. Usman Pagalay (State Islamic University of Malang)
8. Dr. Suyanta, M.Si. (State University of Yogyakarta)
9. Dr. Elisa Sesa, M.Sc. (Tadulako University, Palu)

Next, I want to thanks and welcome to 149 parallel speakers and totally, 450 participants approximately are registered to participate from many universities in Indonesia from Aceh to Papua, and other countries. All of them have shared their research and theoretical papers presented and discussed in the conference.

In this occasion, I would like to thanks to Deputy of Governor of South Sulawesi Province (Ir. H. Agus Arifin Nu'mang, M.Si), Mayor of Makassar City (Ir. H. Ramdhan Dhany Pomanto), Rector of UNM (Prof. Dr. H. Arismunandar, M.Pd.), and Director of Post Graduate Program of UNM (Prof. H. Jasruddin Daud Malago), who are very kind to be the host of welcoming dinner and lunch during the conference.

I want to thanks also to Kalla Group, KIA Kalla, Erlangga Press, Opti Lab, and e-Bimbel Yogyakarta for their contribution as the sponsors of this conference.

Finally, it is my privilege to thanks to all organizing committee members who have been showing good work and determination for the accomplishment of this conference. I would like to apologize to all of you when there are some inconvenience things during the implementation of this conference.

Thank you and wish you have a meaningful conference.

Assalamu'alaikum Warahmatullahi Wabarakatuh.

Head of Committee,

Suwardi Annas, Ph.D.

**Forewords from the Dean of Faculty of Mathematics and Science,
State University of Makassar**

Bismillahirrahmanirrahim
Assalamu'alaikum Warahmatullahi Wabarakatuh

First of all, let us praise to the Almighty, Allah SWT, because of his Blessings and Helps, we are able to gather here to attend the International Conference on Recent Research and Issues in Mathematics, Sciences, Technology, Education and Their Applications (ICMSTEA) 2014.

The development of education and technology in recent decades grows very rapidly. In addition, they have been specialized into many specific topics. Indeed, for researchers and lecturers, being qualified of a specific field as well as being aware of the contemporary development of other fields are two crucial things. One of the reasons why we undertake the conference is to fulfill those two things. By attending the conference, researchers and lecturers have a good opportunity to share their research findings and to obtain broader descriptions of the development of other general knowledge.

We convey our deep appreciation and gratitude to all of the committees that work from the beginning to support and organize the conference. We also strongly expect the participants of the conference to be continually productive, increase the capacity in conducting a research, and carry out both national and international scientific publications.

Finally, let me again recite thank you to the all participants of the conference who are receptive to spend their time to be present and entirely involved at this events. I wish the conference advantageous for all of us.

Billahitaufiqwalhidayah,

Wassalamu'alaikum Warahmatullahi Wabarakatuh.

Dean of Faculty of Mathematics and Science
State University of Makassar

Prof. Dr. H. Hamzah Upu, M.Ed.

Forewords from Rector of UNM

Bismillahirrahmanirrahim
Assalamu'alaikum Warahmatullahi Wabarakatuh

Your respectable, the high officials of State University of Makassar, the committee, the speakers, and the participants of conference.

It gives me a great pleasure to extend to you all a very warm welcome, especially to our keynote speakers who have accepted our invitation to attend the conference.

It is an opportune time to convey to you that UNM is celebrating the 53rd Dies Natalis and it commends the faculty of Mathematics and Science (FMIPA) to be in charge of all activity sequences in the Dies Natalis. However, the support of other faculties is also really influential and gives valuable contribution to the success of the event.

In that celebration, we undertake several agendas including educational and sport activities. The conference, ICMSTEA, is one of our educational activities that covers a wide range of very interesting items relating to mathematics, sciences, education, technology and their applications.

By taking participation of this seminar, it is highly expected to all of us to share our research findings to society and continuously develop new ideas and knowledge. Those things are two significant steps in improving the quality of nations around the world, increasing our familiarity to each other, and even avoiding underdevelopment.

On this good occasion, let me quote what Obama said about the education related to this conference and I wish fruitful for all of us:

Every single one of you has something you're good at. Every single one of you has something to offer. And you have a responsibility to yourself to discover what that is. That is the opportunity an education can provide.

Furthermore, I would like to take this opportunity to express my heartfelt gratitude to all organizing committee especially for the Faculty of Mathematics and Science that primarily hosts this conference particularly and other Dies Natalis events generally.

Finally, this is a great time for me to declare the official opening of the International Conference on Recent Research and Issues in Mathematics, Sciences, Technology, Education and Their Applications (ICMSTEA) 2014.

I wish you a very enjoyable stay in Makassar, I warmly welcome you again, as in Makassar, we say "salamakki battu ri mangkasara".

Wassalamu'alaikumwarahmatullahiwabarakatuh.

Rector of State University of Makassar

Prof. Dr. H. Arismunandar, M.Pd.

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THE INFLUENCE OF LEARNING STRATEGIES AND COGNITIVE LEARNING STYLES ON LEARNING OUTCOMES IN PHYSICS OF STUDENTS AT SMAN 5 BULUKUMBA

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ABSTRACT

This Study aims to examine (1) the differences of physics learning outcomes taught by using inquiry learning strategy and expository learning strategies, (2) the differences of students' learning outcomes who have field-dependent cognitive style taught by using inquiry learning strategies and expository learning strategies, (3) the differences of students' learning outcomes who have field-independent cognitive style taught by using inquiry learning strategies and expository learning strategies, (4) the interaction between the use of learning strategies and cognitive learning styles of students on learning outcomes in physics SMAN 5 Bulukumba.

This research is experiment using a 2 x 2 factorial design. Samples were students of class XI IPA taken randomly and obtain two classes, the first class was given inquiry learning strategies and the second class was given expository learning strategies. Hypothesis test was carried out using SPSS 20 and analyzed by employing Two-Way ANOVA analysis. The results of this study indicate that (1) there are differences of Physics learning outcomes taught by using inquiry learning strategy and expository learning strategies, (2) there are differences of students' learning outcomes who have field-independent cognitive style taught by using inquiry learning strategies, there are differences of students' learning outcomes who have field-independent cognitive style taught by using inquiry learning strategies and expository learning strategies, (4) there are interaction between the use of learning strategies and cognitive learning styles of students on learning outcomes in physics SMAN 5 Bulukumba.

Keywords: Physics learning outcomes, Inquiry, Expository, Learning strategy, Cognitive style, Factorial design

A. Introduction

The learning process in schools emphasizes the effective interaction that occurs between students and educators to achieve learning goals that have been set in various aspects of expected behavior changes. Good classroom management, by utilizing various facilities and infrastructure that are optimally available in learning and in finally can improve learning outcomes (Meutia, 2008). The selection of learning strategies is done by

considering the situations and conditions, learning resources, needs and characteristics of learners faced in order to achieve the needs of certain learning goals.

The selection and application of a learning strategy that suits your needs is one of the factors that greatly influences the achievement of student learning outcomes, including physics subjects. The learning strategy that is commonly used is the expository strategy. This expository

learning strategy places more emphasis on the process of delivering learning information to students and is generally done using the lecture method. Some students feel that this method is very boring because they cannot be actively involved in finding a knowledge, thus causing low achievement of students' learning outcomes. Some other students feel this strategy is suitable for them, because there is no need to bother analyzing or synthesizing a knowledge, just simply drawing an outline of a material and memorizing it according to various problems or learning tasks. The results of Gilakjani's study (2012) show that in applying learning strategies it is necessary to consider students' cognitive learning styles, because the application of learning strategies that are appropriate to students' cognitive learning styles will encourage the achievement of maximum learning outcomes. In learning, educators are required to know the type of cognitive learning style learners, then choose and implement appropriate learning strategies according to the different learning styles. In learning, students who have independent field learning styles generally tend to process the information they receive while students who have field dependent learning styles generally tend to accept existing information (Meutia, 2008).

Students who have an independent field learning style are generally more independent in learning and have a great curiosity about a problem they like. They like learning that involves their activities in finding knowledge. The knowledge he acquired himself would be faster understood and would long be stored in his memory. Students who have field dependent learning styles generally need the help of others in understanding a subject matter. They prefer to learn something that is certain, do not like independent tasks, and have good

memorization skills (Ghufran, Nur and Risnawata, 2010).

In this study the problem was formulated as follows:

1. Is there a difference in physics learning outcomes between students in SMA Negeri 5 Bulukumba who are taught using inquiry learning strategies and those who are taught using expository learning strategies?
2. For students who have a field dependent learning style, are there differences in learning outcomes of students who are taught with inquiry learning strategies and those who are taught with expository learning strategies?
3. For students who have independent field learning styles, are there differences in learning outcomes of students taught with inquiry learning strategies and those taught with expository learning strategies?
4. Is there an interaction between the use of learning strategies and students' cognitive learning styles on physics learning outcomes at SMA Negeri 5 Bulukumba?

B. Research Methods

1. Research Types and Variables

This study was a quasi-experimental study consisting of 3 types of variables, namely the independent variable, the dependent variable, and the attribute variable.

- The independent variable in this study is the learning strategy, consisting of inquiry learning strategies and expository learning strategies.
- The dependent variable in this study is the learning outcomes of students' physics.
- The attribute variables in this study are students' cognitive learning styles, namely Field Dependent (FD) and Independent Field (FI).

The 2 x 2 factorial analysis design in this study is presented in Table 1 as follows.

Table 1. Analysis of 2 x 2 Factorial Design

	Design	
Learning strategies Cognitive style	Expository strategy (A1)	Inquiry strategy (A2)
Field Dependent (B1)	A1B1	A2B1
Independent Field (B2)	A1B2	A2B2

(Margono, 2007)

There are two kinds of data analysis techniques used in this study, namely:

1. Descriptive statistics analysis

Descriptive analysis techniques are used to describe the scores of physics learning outcomes in the first experimental group and the second experimental group. This analysis includes the highest score, lowest score, average and standard deviation.

2. Inferential statistical analysis

Inferential analysis techniques are used to test research hypotheses. Before conducting inferential statistical analysis, as a prerequisite test a normality test and a homogeneity test were used using SPSS 20.

a. Normality test

Normality Test is used to find out whether the data under study are from normally distributed populations. Testing the normality of students' physics learning outcomes data is calculated using SPSS 20 with the One-Sample-Kolmogorov-Smirnov Test analysis. Test criteria: if the significance (p) obtained is greater than = 0.05, then the data comes from a normally distributed population and vice versa.

b. Homogeneity Test

Homogeneity test is used to determine whether the two samples taken are homogeneous (have the same variance). This homogeneity test was calculated using SPSS 20 with Two-Way ANOVA analysis. With the test

criteria: If the significance value (p) obtained is greater than = 0.05 then the data is homogeneous.

c. Hypothesis testing

Before testing the hypothesis, testing is done on the pretest to see the similarity of the students' initial abilities. The hypothesis test formula used for factorial analysis 2 2 is the Multifactor Variance Analysis.

C. Research Results

The GEFT test was given in class XI IPA4 and class XI IPA5 with 40 students per class. GEFT test results in each class were obtained that for class XI IPA4 the lowest score was 1 and the highest score was 24, class XI IPA5 the lowest score was 5 and the highest score was 24.

Descriptive statistics of student learning outcomes in all groups using the IBMSPSS version 20 for windows program are presented in the following table 2:

Learning Style	Learning Strategies	Mean	Std. Deviation	N
FD	expository	76,900	4.67806	20
	Inquiry	71,000	5.64754	20
	Total	73,950	5.92669	40
FI	expository	68,500	4.93644	20
	Inquiry	80,900	4.87637	20
	Total	74,700	7.92982	40
Total	expository	72,700	6.37382	40
	inquiry	75,950	7.22868	40
	Total	74,325	6.96606	80

D. Discussion

Effect of learning strategies on physics learning outcomes

The results showed that there were differences in students' physics learning outcomes taught by expository learning strategies and those taught with inquiry learning strategies. Based on the results of data processing with the IBM SPSS version 20 for windows program, the average learning outcomes of students taught by using learning strategies inquiry is higher than students taught by using

expository learning strategies that are known by measuring learning outcomes tests at the final meeting after learning activities.

In inquiry learning strategies, students are involved in a series of learning activities that emphasize critical and analytical thinking processes. Inquiry learning strategies involve learners to the maximum, directing activities logically and systematically based on learning objectives so as to develop self-confidence for students about what is found in the inquiry process. In expository learning strategies, the teacher presents the material in a row and regularly starting from giving concepts to giving applications with examples of questions so that students seem to memorize the material without knowing the meaning of what they have learned. Therefore, student learning outcomes with the use of inquiry learning strategies are higher than student learning outcomes with the use of expository strategies.

The effect of learning strategies on the physics learning outcomes of students who have field defendant learning styles

Students with FD cognitive style are more likely to choose expository learning strategies as seen from the learning outcomes of students who are taught with expository learning strategies higher than students who are taught with inquiry learning strategies. This is because in expository learning strategies, FD students receive more attention and support so that motivation in themselves increases, as well as more feedback in the classroom. Different in inquiry learning strategies, the teacher is merely a motivator and facilitator so that he does not interact directly with students.

The influence of learning strategies on physics learning outcomes of students who have independent field learning styles

Students who have an independent field learning style (FI) are more likely to choose inquiry learning strategies than expository learning strategies. From the analysis of the data it was found that the average learning outcomes using inquiry learning strategies were greater than the average learning outcomes using expository learning strategies. This is appropriate because students who have independent field learning styles (FIs) tend to have good analytical skills and are more reflective of all possibilities. Students who have an independent field learning style (FI) are more calm, easy to understand the material in terms of group learning and they prefer to observe their own information process as an inquiry learning strategy compared to expository learning strategies which are more monotonous and do not provide the flexibility of space to think more free and creative. Thus students who have independent field learning styles (FI) are more likely to choose inquiry learning strategies than expository learning strategies.

The effect of the interaction between the use of learning strategies and differences in cognitive learning styles

The results showed an interaction between expository and inquiry learning strategies on the field of learning style dependent and independent field for students. In the inquiry learning strategy, students with FI learning styles are superior to FD learning styles but in expository learning strategies FD learning styles are superior to FI learners. The difference in acceptance of learning with different strategies shows that there is an interaction between learning strategies with students' cognitive learning styles supported by the results of data analysis in Table 2 with sig values. for the interaction between learning styles and learning strategies of 0,000 where this value is less than 0.05 indicates that there is an

interaction between learning strategies with cognitive styles on physics learning outcomes of students of class XI IPA SMA Negeri 5 Bulukumba on Static Fluid subject matter. This is in line with research conducted by Solihatin (2011) published in the Scientific Journal of Democracy Pulpit, concluding that there is an interaction between learning strategies and learning styles on Civics learning outcomes.

E. Conclusion

Based on the results of data analysis can be concluded as follows:

1. There are differences in physics learning outcomes between students in SMA Negeri 5 Bulukumba who are taught using inquiry learning strategies and those who are taught using expository learning strategies
2. There are differences in learning outcomes of students who are taught with inquiry learning strategies and those who are taught with expository learning strategies for students who have field dependent learning styles.
3. There are differences in learning outcomes of students who are taught with inquiry learning strategies and those who are taught with expository learning strategies for students who have independent field learning styles.
4. An interaction occurs between the use of learning strategies and differences in students' cognitive learning styles on physics learning outcomes at SMA Negeri 5 Bulukumba.

F. Bibliography

Abdurrahman, M. 1999. *Pendidikan Bagi Anak Berkesulitan Belajar*. Jakarta: Rineka Cipta.

Boström. 2011. Effects of Learning-Style Responsive Versus Traditional Approaches on Grammar Achievement. *Institute for*

Learning Styles Journal
Volume 1, Fall 2011, hal. 17-38.

Ghufron, M. Nur dan Risnawata, R. 2010. *Gaya Belajar Kajian Teoretik*. Yogyakarta: Pustaka Pelajar.

Gilakjani. 2012. Visual, Auditory, Kinaesthetic Learning Styles and Their Impacts on English Language Teaching, *Journal of Studies in Education* ISSN 2162-6952. 2012, Vol. 2, No. 1, hal. 630-636.

Hamalik. 2003. *Proses Belajar Mengajar*. Bandung: Bumi Aksara.

Haris. 2009. *Evaluasi Pembelajaran*. Yogyakarta: Multi Pressindo.

Margono. 2007. *Metodologi Penelitian Pendidikan*. Jakarta: PT Rineka Cipta.

Meutia, N. 2008. Pengaruh Strategi Pembelajaran dan Gaya Belajar Terhadap Hasil Belajar Sejarah. *Jurnal Teknologi Pendidikan*, Vol. 10 Nomor 2, hal. 87-97

Nasution. 2011. *Berbagai Pendekatan dalam Proses Belajar dan Mengajar*. Jakarta: PT Bumi Aksara

Purwanto. 1990. *Psikologi Pendidikan*. Bandung: PT Remaja Rosdakarya.

Slavin, R.E. 2008, Samosir, Marianto (translator). *Psikologi Pendidikan Teori dan Praktik*. Jakarta: PT Indeks.

Solihatin, E. 2011. Pengaruh Strategi Pembelajaran dan Gaya Belajar terhadap Hasil Belajar Pendidikan Kewarganegaraan. *Jurnal Ilmiah*

- Mimbar Demokrasi*, Vol. 10
Nomor 2, hal. 1-18.
- Sudjana, N.1996.*Cara Belajar Siswa Aktif Dalam Proses Belajar Mengajar*,Bandung: Sinar Baru Algensindo.
- Sudjana, N. 2004.*Dasar-dasar Proses Belajar Mengajar*. Bandung: Sinar Baru Algensindo.
- Sugiyono. 2008. *Metode Penelitian Pendidikan*. Bandung: Alfabeta.
- Suyono. 2010. Pengaruh Penggunaan Strategi Pembelajaran Terhadap Hasil Belajar PKn Siswa SMP Negeri 1 dan 2 Gedangan Sidoarjo Yang Memiliki Tingkat Motivasi belajar Yang Berbeda. *Jurnal Ilmiah*, Vol. 6 Nomor 11.
- Trianto, 2009.*Mendesain Model Pembelajaran Inovatif-Progresif (Konsep, Landasan, dan Implementasinya pada KTSP)*. Jakarta: Kencana Prenada Media Group.
- Uno, H.B. 2008. *Model Pembelajaran*. Jakarta: PT Bumi Aksara.
- Winarto B. 2012. Pengaruh Dua Strategi Pembelajaran (Inkuiri dan Ekspositori) dan Motivasi Belajar Terhadap Prestasi Belajar, *Disertasi* Program Studi Teknologi Pembelajaran PPS Universitas Negeri Malang
- Wiradana.2012. *Penerapan Strategi Konflik Kognitif Untuk Meningkatkan Aktivitas dan Prestasi Belajar Siswa Kelas VIIa SMP Negeri 4 Nusa Penida*.Warta P3SDM Melati.
- Zaini. 2008. *Strategi Pembelajaran Aktif*. Yogyakarta: Pustaka Insan Madani.