No. ISSN 2303-1417 VOLUME 2

Proceedings

INTERNATIONAL CONFERENCE

ICEL 2013

The First International Conference on Education and Language (ICEL)

28,29,30 January 2013
Bandar Lampung University (UBL)
Indonesia

In Cooperations With

Indonesia | Australia | India | Malaysia

Faculty of Teacher Training and Education (FKIP)
English Education Study Program, Bandar Lampung University (UBL), Indonesia

PROCEEDINGS

THE FIRST INTERNATIONAL CONFERENCE ON EDUCATION AND LANGUAGE

ICEL 2013

28 -30 January 2013

Organized by:
Faculty of Teacher Training and Education (FKIP), English Education Study Program
Bandar Lampung University, Jl. Zainal Abidin Pagar Alam No.89 Labuhan Ratu,
Bandar Lampung, Indonesia
Phone: +62 721 36 666 25, Fax: +62 721 701 467
www.ubl.ac.id

PREFACE

The activities of the International Conference is in line and very appropriate with the vision and mission of Bandar Lampung University (UBL) to promote training and education as well as research in these areas.

On behalf of the First International Conference of Education and Language (ICEL 2013) organizing committee, we are very pleased with the very good responses especially from the keynote speakers and from the participants. It is noteworthy to point out that about 80 technical papers were received for this conference

The participants of the conference come from many well known universities, among others:
University of Wollongong, NSW Australia, International Islamic University Malaysia, Kyoto University (Temple University (Osaka), Japan - Jawaharlal Nehru University, New Delhi, India - West Visayas State University College of Agriculture and Forestry, Lambunao, Iloilo, Philipine - Bahcesehir University, Istanbul, Turkey - The Higher Institute of Modern Languages, Tunisia - University of Baku, Azerbaijan - Sarhad University, KPK, Pakistan - Medical Sciences English Language Teacher Foundation Program, Ministry of Health, Oman - Faculty School of Arts and Sciences, Banga, Aklan Philippines - Sultan Ageng Tirtayasa, Banten, - Pelita Harapan University, Jakarta - STIBA Saraswati Denpasar, Bali - University of Muhammadiyah Yogyakarta - Ahmad Dahlan University Yogyakarta - Sriwijaya University, Palembang - Islamic University of Malang - IAIN Raden Fatah Palembang - Universitas Diponegoro, Semarang, Indonesia - Universitas Haluoleo Kendari - State Islamic University of Sunan Gunung Djati, Bandung - Tadulako University, Central Sulawesi - Sanata Dharma University - Lampung University and Open University,

I would like to express my deepest gratitude to the International Advisory Board members, sponsors and also to all keynote speakers and all participants. I am also grateful to all organizing committee and all of the reviewers who contribute to the high standard of the conference. Also I would like to express my deepest gratitude to the Rector of Bandar Lampung University (UBL) who gives us endless support to these activities, so that the conference can be administrated on time.

Bandar Lampung, 30 January 2013

Mustofa Usman, Ph.D
lCEL 2013 Chairman

PROCEEDINGS

The First International Conference on Education and Language
(ICEL 2013)
BANDAR LAMPUNG UNIVERSITY
Bandar Lampung, Indonesia
January 28, 29, 30, 2013

Steering Committee

Executive Advisors
M. Yusuf S. Barusman
Andala Rama Putra Barusman

Chairman
Mustofa Usman

Co-Chairman
Harpain
Baginda Simaibang

Secretary
Yanuar Dwi Prasetyo

Treasurer
Tissa Zadya

Technical Committee Team
Tissa Zadya
Nadia Dalimunthe
Yanuar Dwi Prasetyo
Bery Salatar
Zainal Abidin

International Advisory Board

Mustofa Usman, Indonesia
Garry Hoban, NSW Australia
S. Mohanraj, India
Ken Cruickshank, NSW Australia
Baverly Derewianka, NSW Australia
Ahmad F. Ismail, Malaysia
Hery Yufrizal, Indonesia
M. Yusuf S. Barusman, Indonesia
Jan Wright, NSW Australia
Harpain, Indonesia
Hon Wie Leong, Singapore
Raihan B. Othman, Malaysia
Andala R. P. Barusman, Indonesia
Khomsahrial Romli, Indonesia
Mohamad Sahari Nordin, Malaysia
Jayashree Mohanraj, India
Ujang Suparman, Indonesia
Ahmad HP, Indonesia
Baginda Simaibang, Indonesia
Nuraihan Mat Daud, Malaysia
Udin Syarifuddin W, Indonesia
Undang Rosyidin, Indonesia

Organizing Committee

Chair Person
Tissa Zadya

Vice Chair Person
Baginda Simaibang

Secretary
Yanuar Dwi Prasetyo

Treasure
Samsul Bahri
Dian Agustina

Special Events
Bery Salatar
Nadia Dalimunthe
Siti Rahma Wati
Dina Ika Wahyuningsih
Kefas Ajie
Fajar Ryantika

Transportation and Accommodation
Irawati

Publication and Documentation
Indriarti Gultom, MM.
Dina Ika Wahyuningsih
Noning Verawati
Masitoh
Rifandy Ritonga

Consumption
Yulfriwini
Ni Sayu Kade Lena Widyawati
Miryanti Feralia
Novita
Cornellius Vilardi
M. Agusman Ajijaya
I Gede Ryan Ekki .P.
Qory Fahrunisa ,F.

Facility and Decoration
Zainal Abidin
Sudarto
Tri Suhartono
Sukamto
Suprapto

Table Of Content

IMPLEMENTATION OF SCIENCE PRACTICAL WORK AT FACULTY OF TEACHER TRAINING AND EDUCATIONAL SCIENCE, UNIVERSITAS TERBUKA, INDONESIA

Amalia Sapriati[1] , Ucu Rahayu[2], and Yoyoh Kurniawati[3]
Faculty of Teacher Training and Educational Sciences, Universitas Terbuka (UT), 15418, Indonesia,

e-mail address: [1]amaliasapriati@yahoo.co.id, lia@ut.ac.id, [2]urahayu@ut.ac.id, [3]ykurniawati@ut.ac.id.
Phone: +62 21 7490941, ext. 1608/2002, Fax: +62 21 74714740

Subtheme: Biology Education

Abstract*:*

Science practical work is an important part of Biology Teacher Education Program (BTEP) curriculum in order to (1) show confirmation and illustration of theory, and (2) develop students' knowledge and skills to teach successfully in junior and senior high school science laboratory. This paper describes how UT conducts the practical work and how student's perception toward the implementation of practical work. The paper was based upon the study of the practical work implementation in the first semester of 2011, at an UT-Regional Office (RO). Data were collected by interviewing practical work instructors, distributing a questionnaire to 15 students, and observing practical work activity. The results of the study revealed that (1) UT/RO collaborated with a face to face institution of higher education to facilitate BTEP students doing practical work activity, (2) the students actively participated to accomplish the required tasks of practical works and wrote the report, (3) practical work assessment was based upon students' performance and practical work report, and (4) students considered that practical work will develop their understanding of scientific concepts, science skills, curiosity, and ability to work carefully and systematically. The conclusion of the study were (1) implementation of practical work tended to be used for confirmation and illustration theory and presentation experience for future teaching, and (2) students well and actively performed the practical work, were capable to write the report, and revealed positive perception toward the practical work.

Keywords: science practical work, laboratory work, teacher training, biology teacher education program, distance learning, open learning

---

1. INTRODUCTION

Faculty of Teacher Training and Educational Sciences (FKIP) of Universitas Terbuka, Indonesia (UT) has been offered Biology Teacher Education Program (PBIO) for secondary school teacher since 1986. All of the BTEP students should perform science practical works (laboratory and experimental works) activities. Those activities are a central and important part of curriculum. The implementation of practical works has a challenge, especially in terms of providing room or location, equipments and materials, as well as instructors/supervisors. Aspects that support the implementation comprise of laboratory staffs, home lab programs, residential programs

lab, lab instructors, external institution, facilities and internal funds of university.

Practical work activities are an important part in science education (Abrahams & Millar, 2008; Abdulwahed, et al., 2008; Downing & Holtz., 2008; Hofstein & Lunetta, 2004; Hofstein & Mamlok-Naama, 2007). The science laboratory is a setting in which students work individually or cooperatively in small groups to analyze phenomena. In addition, students interact with facilities to observe and examine the phenomena (Hofstein, 2004; Hofstein & Mamlok-Naama, 2007).

The form of laboratory activities may include hands-on labs, simulated labs, remote labs, virtual labs/activities, and practical work (Downing and Holtz, 2008; Ma & Nickerson, 2006). In addition Downing and Holtz described that practical work can be intended to facilitate online science learning. In science, it involves both laboratory and fieldwork activities and is closely related to learning by doing and experimentation. Furthermore, in distance education system regarding laboratory/practical work activities can be provided for students in the form of face to face sessions, home lab kits, video demonstrations; and interactive simulations (Kennepohl, 2010).

Factors which still hinder learning in practical work activities consist of (1) practical work activities do not according to abilities and skills of competencies that students have to master at the ends of learning, (2) assessment of capabilities and skills of practical works tend not to be done seriously, (3) limitations of practical work practices regarding resources, time constraints for conducting the practical work properly, the large number of students, and appropriate place for implementation (Hofstein, 2004; Hofstein & Lunetta, 2004; Greco, et al., 2010; Yung; 2001).

Kennepohl and Shaw (2010) stated that online and distance delivery face barriers such as classroom scheduling, physical location, and financial status, as well as job and family commitments, furthermore teaching science at online and distance education system is more demanding than and certainly not as common as teaching science at face to face education. Therefore, running of practical work activities at online and distance education will have challenges in terms of providing classrooms facilities, competent instructors, schedule activity, student grouping, and assessment.

This paper describes how UT conducts the practical work, how the learning outcomes of practical work, and how student's perception toward the implementation of practical work. The paper was based upon the study of the practical work of 2 courses (Science Practicum and Biology Practicum 2). The implementation of the study was at the UT RO which provides those practicum courses for BTEP students in the first semester of year 2011. The RO of this study provided activities for students from three ROs. Data were collected by using an interview to regional office's staffs and practical work instructors, and a questionnaire to 15 students (7 students for Science Practicum and 8 students for Biology Practicum 2), and an observation during carrying out of the practical work.

2. RESULTS AND DISCUSSION

Science practical work program implementation is coordinated by UT's Regional Offices (ROs). The model of partnerships with other institutions is used in order to deliver the practical work program. ROs in collaboration with universities or schools provide facilities and instructors so that students can do their work properly. Students can carry out the activities individually or in groups. However, they should be guided by the instructor to work with in order to work properly and have feedback from the instructor. Before doing the activities, they should have read the module and review dry-lab simulation program of practical work activities. UT is now

being continued to develop more topics of dry-lab simulation programs with the aim of meeting the needs of students to do practical work.

As Shaw and Carmichael (2010) stated that to run science practical work program in distance education should be supported by the availability of laboratory staffs, home lab programs, residential programs labs, lab instructors, external institution, facilities and internal funds of the distance education institution itself. Thus, UT's RO had determined the university as a partner by considering the availability of facility, materials, instructor, lab staffs, and practical work assessor. RO in collaboration with the university that has been selected provided practical works activities for students. RO arranged practical work schedule by considering labs schedule in the university partners and student's time off work. Practical works activities for the courses Science Biology Practicum and Practicum 2 conducted in the laboratory at the university partners. In addition, instructor, lab staffs, and marker of practical works skills and report were from the university. The schedule of the practical works have done during low student practical works activity in the university and UT's students (mostly of them were school teachers) were off from their work. Students came and gathered to the university partner and remained to stay around the university for one week. Thus, they worked and completed all practical works tacks within one week. Students carried out the practical works activities in groups with 6-7 students. Tasks of practical activities were taken from the tasks listed on the modules for both the practicum courses. Regarding the form of laboratory activities (Downing and Holtz, 2008; Ma & Nickerson, 2006), in this study, students conducted hands-on labs and practical works and tended the results of their activities in order to confirm and illustrate theory of science and use and present their experiences for future teaching.

Results of analysis toward students perception showed that (1) students had already had a module, however not thoroughly studied it before, therefore they always confirm the procedures to the module and confirm the results of practical works to other students (as they recorded the data/information), (2) facilities and materials were available to support their practical works activities, and (3) the instructor and lab staffs assisted and guided them during activities. Instructors provided a brief explanation of the content and general lab procedure, however they did not deliver test or quiz to check student readiness in doing practical works. Data analysis results in Table1.

Table 1. Facility, Instructor, and Student Procedure Understanding

	Science Practicum (PEPA4203)		Biology Practicum 2 (PEBI4419)	
	Mean	Std. Deviation	Mean	Std. Deviation
Student:				
Read module	2.9	0.35	2.0	0.58
Understand tasks	3.1	0.35	3.3	0.49
Facility:				
Equipments	3.4	0.42	3.6	0.45
Materials	3.1	0.35	3.6	0.48
Instructor:				
Understand content	3.4	0.52	3.7	0.49
Provide teaching	3.5	0.53	3.4	0.53
Propose solution	3.3	0.46	3.4	0.53
Provide explanation	3.0	0.53	3.0	0.82
Provide guidance	3.3	0.46	3.7	0.49

N of Students N = 8 N = 7

Note: 1: strongly disagree 2: disagree 3: agree 4: strongly agree

Moreover, the result of this study showed that (1) students had a positive attitudes towards practical works and assumed that practical works process and writing report were easy, enjoyable and useful for them, (2) in addition, they perceived that practical works could enhance their science knowledge in science and improve their practical work skills in observation, prediction, and following the procedure, and improve their ability in working systematically. Thus, the activities though practical works setting is perceived as the attempt to develop students' understanding of concepts, science skills, and attitudes and interest towards science (Hofstein, 2004; Hofstein & Lunetta, 2004; Hofstein & Mamlok-Naama, 2007; Tiberghien, 2000). Table 2 shows the results of the finding.

Table 2. Student's Attitudes and Learning Outcomes

	Science Practikum		Biology Practicum 2	
	Mean	Std. Deviation	Mean	Std. Deviation
Practical works was easy	3.1	0.35	3.0	0.58
Doing report was easy	2.8	0.71	2.7	0.76
Practical works was enjoyable	3.4	0.52	3.6	0.53
Practical works was useful	3.5	0.53	3.3	0.76
Science knowlegde	3.5	0.54	3.7	0.49
Skills in observation	3.1	0.34	3.7	0.49
Skills in data recording	3.3	0.46	3.7	0.49
Skills to predict results	3.4	0.52	3.7	0.49
Skills in practical works	3.1	0.35	3.7	0.49
Accuracy	3.3	0.46	3.7	0.49
Curiosity	3.5	0.54	3.7	0.49
Working systematically	3.4	0.52	3.4	0.79

Results of analysis toward perception of instructors revealed that (1) student understanding of the content and practical work procedure was quite well, students interest was good, and students activity during practical work was well, (2) practical works experiences provide additional knowledge and skills to students, (3) communication and interaction during practical works occurred smoothly and properly, so the practical works could be done quite well, (4) it was rather difficult to have the tool for identifying the motion of heart muscle of frog, thus in this case, student used the modified and simpler tool. In addition, analysis of study showed that instructors needed improve time management for each activity order to conduct practical work more effectively. Moreover, instructors stated that practical works assessment carried out on the aspects of the practical process and lab reports. Practical works assessment included assessment of (1) students readiness for practical works, (2) students skills and thoroughness in assembling and using the tools/ materials, (3) student skills in conducting practical works experiment and improvisation, (4) precision/accuracy in observation and data/information recording, and (5) accuracy, cleanliness , neatness and work safety. Process of practicum works was assessed during activity by an instructor. Lab report was a product of practical work. The report was assessed by instructors who met qualifications in terms of science content and practical skills as well as understand how to mark practical report.

Each student report was assessed by 2 (two) instructors. The instructors took approximately 2-3 days for marking one student report. Practical work score contributed 30% and practical works report contributed 70% towards the course grade. Regarding student assessment, generally assessment of student practical work carried out on practical work reports, thus grade of students' performance do not reflect actual students' practical work abilities and skills (Hofstein, 2004; Hofstein & Lunetta, 2004; Greco, et al., 2010). A practical work skills consist of manual dexterity, cooperation, and communication skills. These aspects are considered should be assessed in the report includes the observation and recording, theoretical stage of inquiry, questioning, hypothesizing and planning, (post inquiry stage, presentation of result, and conclusion. Holftein (2004) argued that practical work assessment should be carried out on both the practical work skills (20%) and practical lab reports (80%).

3. CONCLUSION

This study revealed that (1) implementation of practical work tended to be used for confirmation and illustration theory and presentation experience for future teaching, (2) the students actively participated to accomplish the required practical works and presented the report, (3) practical work assessment was based upon students' performance and practical work report, and (4) students considered that practical work will develop their understanding of scientific concepts, science skills, curiosity, and ability to work carefully and systematically. Thus the conclusion of the study were students well and actively performed the practical work, were capable to write the practical lab report, and revealed positive perception toward the practical works.

REFERENCES

[1] Abdulwahed, M., Nagy, Z.K, & Blanchard, R. (2008). Beyond the classroom walls: remote labs, authentic experimentation with theory lectures. *Proceedings of the 2008 AaeE Conference, Yeppoon*.

[2] Abrahams, I. & Millar, R. (2008). Does Practical Work Really Work? A study of the effectiveness of practical work as a teaching and learning method in school science. *International Journal of Science Education, Vol. 30 (14), 17 November 2008, pp. 1945–1969*

[3] Downing, K. & Holtz, J. (2008). Instructional Design Considerations for Science E-Learning. In C. Bonk et al. (Eds.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2008* (pp. 2-7). Chesapeake, VA: AACE.

[4] Greco, E.C., Reasoner, J.D., Bullock, D., Castillo, C., Buford, P., & Richards, G. (2010). Efficacy of a final lab practicum and lab reports for assessment in a fundamentals electric circuits laboratory. *Proceedings of the 2010 Midwest Section Conference of the American Society for Engineering Education*

[5] Hofstein A., (2004), The laboratory in chemistry education: thirty years of experience with developments, implementation and evaluation, *Chemistry Education Research and Practice*, **5**,247-264.

[6] Hofstein, A. & Lunetta, V.N. (2004). The Laboratory in science education: foundations for the twenty-first century. *Science Education*, 88, 28 – 54.

[7] Hofstein, A., & Mamlok-Naama, R. (2007). The laboratory in science education: the state of the art**.** *Chemistry Education Research and Practice*, **8** (2), 105-107.

[8] Kennepohl, D. (2010). Remote control teaching laboratories and practicals. In Kennepohl, D. & Shaw, L. (Eds). *Accessible elements : teaching science online and at a distance.* Chapter 9, pp.167-187. Edmonton, Canada: AU Press, Athabasca University.

[9] Ma, J. & Nickerson, J.V. (2006). Hands-on, simulated, and remote laboratories: a comparative literature review . *ACM Computing Surveys, Vol. 38, No. 3, Article 7, Publication date: September 2006*.

[10] Shaw, L. & Carmichael, R. (2010). Needs, costs, and accessibility of de science lab programs. In Kennepohl, D. & Shaw, L. (Eds). *Accessible elements : teaching science online and at a distance.* Chapter 10, pp.191-211. Edmonton, Canada: AU Press, Athabasca University.

[11] Tiberghien, A. (2000). Designing teaching situations in the secondary school. In R.Millar, J. Leach, & J. Osborne (Eds.), *Improving science education: The contribution of research* (pp. 27–47). Buckingham, UK: Open University Press.

[12] Yung, B. H. W. (2001). Three views of fairness in a school-based assessment scheme of practical work in biology. *International Journal of Science Education*, 23, 985–1005.

universitas
bandar lampung

Jl. Z.A. Pagar Alam No.26 Labuhan Ratu
Bandar Lampung 35142 Phone: +62 721 701463
www.ubl.ac.id
Lampung - Indonesia

9 772303 141001