ESD Concept Integration into Teaching Subjects
Some proposed thoughts for Lecturer Guideline of ESD Integration in Teaching Plan of Gadjah Mada University, Indonesia

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Abstract

Purpose: The purpose of this paper is to show the facts that application of ESD concept in teaching and learning as well as community service activities varies from one Study Program (SP) to another, and this more sustain than ESD concept application in research activities. This case study also shows one strategy to improve staff concern to construct ESD-based teaching plan of their own teaching subjects. This paper offers some main thoughts for ESD concept integration in HE teaching subjects.

Design/Methodology/Approach: survey of basic ESD awareness of staff member (including authority) and implication of ESD concern in a unit management of some study programs in Gadjah Mada University, Yogyakarta, Indonesia. Unit Based Sustainability Assessment Tools (USAT) was used only for education as well as management activities, education activities are including: teaching, research, and community services.

Findings: UGM has been recorded having a university wide curriculum of Student Community Services (SCS) since 1970s and this become an ESD-based curriculum candidate in HE which had been implied in 2007, and SCS becomes an ESD-based SCS for community empowerment learning (SCS-CEL). There are differences of ESD perspectives among authorities within sciences and socio humanity SP clusters, when SPs were assessed in ESD-based teaching, research & community services, as well as ESD application in management. Based on this findings, educational approaches in ESD integration in HE Curriculum between students from sciences and socio humanity clusters must be constructed properly, but should contain some basic principles including: balance between theoretical and practical competence, changing value and professional ethics, raise student responsibility, student participation, and global and local perspectives.

Practical Implications: Different trend of ESD assessment using USAT tools between science and non-science SP shows different strategy in educational approaches between these clusters. Therefore to standardize ESD-based teaching and learning standard, a teacher guideline should be constructed, and important subject and main idea for ESD basic content should be proposed in order to support lecturers.

Originality/Value: implementation of ESD concept in teaching has been a big challenge for many HE institutions due to the need of a higher pedagogical thought and better understanding as well as clear perspective of lecturer about ESD content complexity. The SCS-CEL program would be more effective and efficient if the students had received ESD-based course subject in their HE education system before they signed for SCS-CEL program. A big gap between SPs in science and non-science both in teaching, research, community services; and SP management, therefore a guideline for ESD insertion in teaching subjects and a strategy for maintaining curriculum sustainability of the ESD had been standardized.

Keywords: Sustainable development, Sustainability,
Paper type: conceptual paper and case study
I. Introduction

UGM has commitment in promoting ESD which is implicitly stated in UGM strategic Plan 2012-2017. These are some of the UGM strategic plans in which sustainable development can be placed and implemented. In academic pillars, the development of learning systems (intra-, co-, and extra-curriculum) which are able to solve local, national, and global challenges. Strategic plan for research is implement researches that its products are environmentally friendly, applicative, and responsive towards community, nation and country’s problems and challenges and can be used as national reference. In community services, UGM develop community services program which are able to support sustainability of community independency and prosperity (UGM Strategic Plan, 2012-2017).

Nine credit units (cu) among 144 cu for under-graduate curriculum in UGM are University wide compulsory teaching subjects, including KKN (‘Kuliah Kerja Nyata’, a Student Community Services/SCS) that have been conducted since 1970s. As a learning program, SCS has 3 different targets of learning: an individual learning (student learning), a community learning, and an institutional learning. SCS is designed for students who are in sixth or seventh semester, using SCL-problem based learning approach, formed in a multi-disciplinary group of students staying for 6 to 8 weeks in the village. During their staying in the village, students learned more interaction, leadership, and team work to give experiential learning for students.

When ESD become a new educational concept that should be integrated in HE education, rationally therefore, this ESD concept was inserted into SCS program. In 2007 SCS paradigm shifted from community development become SCS for community empowerment with village’s specific theme of development, or popular stated as SCS-CEL. This program had been adopted by Indonesia Directorate General for Higher Education (DGHE) and applied nationally. SCS-CEL program in UGM conducted every year in two times, between semester (July-August) and end of year (November-December). This program mobilizes 5000 to 8000 students to the village nationally wide, from Aceh to Papua (west point to east point of Indonesian archipelago) as UGM commitment for country support in human resource development.

Regular evaluation on SCS-CEL thematic program, only 8-11% of those about 250 thematic programs are ESD based (SCS-CEL period 2010-2012). ESD awareness of lecturers as SCS-CEL field supervisor is still varies from faculties and departments, and program achievements are still not optimum due to ESD-based implementation in multidisciplinary approach that may not be well-perceived by students both in hard sciences and soft sciences background. This problem initiate future need for ESD integration in some teaching subjects all faculties to support better understanding in students competencies in their own subject knowledge (as one level of student professional development). This project aims to concept teaching guideline for ESD integration in some related teaching subjects in UGM.

II. Procedure

1. ESD evaluation of some departments in UGM

Existing condition of ESD awareness in some faculties and departments of UGM were evaluated using USAT questionnaire (Togo and Sisitka, 2009) only for teaching, research and community services (Part A) and operational and management (Part B) that had been distributed
to 18 faculties (more directly concern to study program curriculum). Analysis was divided between sciences departments and socio-humanity departments.

2. ESD Teaching Grants for lectures

In 2012 and 2013, RCE launched program of internal workshop for increasing ESD awareness through ESD-based teaching grants which was offered for all lectures who teach in ESD related teaching subject.

3. Workshop for guideline inputs

Some thoughts in the ESD-ITP program shared with colleagues in the Center for Education Development and also ESD teaching grant’s winner to obtain some inputs for drafting a guideline for ESD integration.

III. RESULTS AND DISCUSSIONS

Returned questionnaires were collected only from 8 departments (6 of them are science departments, and 2 of them are socio-humanity departments).

![Fig. 1.a: UGM-Part A](image)

![Fig. 1.b: UGM-Part B](image)

Fig. 1. ESD assessment of total SP in UGM on Part A (teaching, research and community services) and Part B (operational and management)

Generally, most departments in UGM applied ESD in teaching, research, and community services better than in operational and management (Fig.1a. and 1.b.)

![Science Departments](image)

![Socio Humanity Departments](image)

Fig. 2. ESD assessment in teaching, research & student community services (Part A).
Surprisingly, when questionnaire analysis was separated between science and socio humanity departments, showed that science departments were better in part A (Fig. 2.a and 2.b.), in the contrary, socio humanity departments were stronger in part B, operational and management (Fig. 3.a and 3.b.), though this findings still need to be verified due to small sample size in socio humanity.

![Science Departments](image1)

![Socio Humanity Departments](image2)

**Fig.3.** ESD assessment on operational and management (Part B)

From the USAT results showed that the pattern of ESD sensitivity between science and socio humanity is different, and bridging among these should be supported through workshops, field work, or collaborative teaching program. Some initiation thoughts during syndicate groups in ESD-ITP training is the main contents of ESD insertion into some teaching subjects should relates to:

1. Ecosystem services – respect to nature
2. Energy and resources saving
3. Cultures and natures diversity
4. Green economics
5. Humanity and equity

Beside those contents, key principles of teaching should also be considered (ITP-ESD, 2013), these are:

a. Balance between theoretical-practical competence, global and local perspectives and problems
b. Changing value and professional ethics
c. Raise student responsibility
d. Student participation

Since UGM curricula had the SCS-CEL program at the university level that was designed as the action plan for ESD competencies in teaching and learning in all departments (ESD-ITP Ind phase 4th report, 2013), therefore this ESD insertion program is aims to be applied in some ESD-related teaching subjects at the Study Program (Fig. 4).
In science departments where environmental studies are frequently discuss and ESD is easier to contextualize and sensitize, than does in the socio humanity departments, therefore wider issues and perspectives of ESD (Blewitt and Cullingford, 2004, Gustafsson and Warner, 2008, Sancyaningsih, 2013ab; CGSS, 2011) should be specialize in those two clusters.

As also mentioned by Naeem and Peach (2011), the most difficult for teachers is combining ESD issues, principles within pedagogical standard into their own Teaching Subjects (TS), even when they insert ESD-concepts. The ESD workshops on ESD-ITP and colleagues form Center for Education Development (P3-UGM), as well as experiences from some previous ESD teaching grants winner, we formulized some important pedagogical level when producing a teaching and learning plan, for undergraduate students and for graduate students as follows:

### Table 1. Pedagogical level for ESD insertion in TS

<table>
<thead>
<tr>
<th>Content and scope</th>
<th>1 (undergraduate)</th>
<th>2 (graduate)</th>
<th>3 (postgraduate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional</td>
<td>Professional</td>
<td>Professional + national to international</td>
<td>Ethical Local wisdom</td>
</tr>
<tr>
<td>Multidisciplinary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student competency</td>
<td>Communication critical thinking</td>
<td>Sustainability, Leadership</td>
<td>Comprehensiveness,</td>
</tr>
<tr>
<td>Paradigm</td>
<td>Teaching to theory</td>
<td>Training to experiential</td>
<td>Training to transformational</td>
</tr>
<tr>
<td>Teaching approach</td>
<td>Collaborative learning</td>
<td>Problem Based Learning</td>
<td>Problem Based &amp; Participatory Learning</td>
</tr>
<tr>
<td>Assessment</td>
<td>Report/Presentation</td>
<td>Observation on action</td>
<td>Observation on wisdom</td>
</tr>
<tr>
<td>Learning stage</td>
<td>Active learning Transactional</td>
<td>Experiential learning Transformational</td>
<td>Deep learning Transformational</td>
</tr>
</tbody>
</table>

Results of ESD teaching grants showed that some ESD principles had been applied in some teaching subjects in SP or Department, even though pedagogical approaches used are only improvement of teaching contents in some ESD-related TS. Best practices observed in the Fishery Study Program in Agriculture Departments showed area improvement in teaching plan, both in contextualization and also ESD sensitization in the TS (Table 2.). Other Teaching grant winners, including from chemical and architecture engineering, geography and from philosophy departments, were well-recorded in the report (RCE report, 2012)
Table 2. Some best practices of ESD–based TS plan in Fishery Department

<table>
<thead>
<tr>
<th>Subject</th>
<th>Improved area</th>
<th>Teaching-team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality control of fish product (2-0 cu)</td>
<td>value added through efficient and effective on by-product mgf</td>
<td>Dr. Amir Husni, M.P. Prima Putra, M.Sc.</td>
</tr>
<tr>
<td>Fish nutrient (2-0 cu)</td>
<td>Potential unedible product to improve community nutrient status</td>
<td>Dr. Amir Husni, M.P. Dr. Dewi Puspita, M.Sc</td>
</tr>
<tr>
<td>Introduction to fish product technology</td>
<td>Environmental issues on fish product technology</td>
<td>Prof. Dr. Ir. Ustadi, Dr. Ir. Iwan Yusuf, M.Sc Prihati Nugraheni, M.P.</td>
</tr>
<tr>
<td>(2-0 cu)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish product technology (2-1 cu)</td>
<td>Value added from remanaged waste</td>
<td>Prof. Dr. Ir. Ustadi, M.P. Dr. Ir. Latif Sahu-bawa, Nurfitri Ekantari, M.P.</td>
</tr>
<tr>
<td>Fish industrial waste management (2-1 cu)</td>
<td>Efficient waste technology system</td>
<td>Dr. Ir. Latif Sahu-bawa, Dr. Amir Husni, M.P. Dr. Indun Dewi Puspita,</td>
</tr>
<tr>
<td>Undergraduate thesis (0-6 cu)</td>
<td>Development of ESD based research road map</td>
<td>All team</td>
</tr>
</tbody>
</table>

Note: cu=credit unit

IV. CONCLUSION

ESD integration in every teaching subjects and also in SCS-CEL program is still strategic for improving ESD awareness, action-plans, and student competence in Gadjah Mada University. Planning ESD-based teaching subject need to understand basic pedagogical principles, comprehensively and well discussed contents, in order to ease contextualization within science and socio-humanity clusters.

ESD-based teaching, research and community services are main challenges for education, for preparing ten to fifteen year later generation. Not only hard science competencies, but also soft science including ethics, ecosystems alert, green economics, and respect to nature, are the core contents in ESD.

References
8. RCE report, LPPM-UGM, 2012