

Social Construction of the 'Environment': Role of Tertiary Institutes in Behaviour Transformation

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ABSTRACT

The Commission on Higher Education of the Philippines mandates the inclusion of varied practica and projects in the teacher education curriculum. However, the inclusion of action research, which has a positive impact on the education process, as part of the curriculum was not given an emphasis. This study aims to determine the role of action research in behavior transformation of education students in the construct of "environment" utilizing a case study method using a qualitative approach. Mobilization of the participants of the study to conduct their own researches on the context of the environment is the main case of the study. Participants (n=6) of the study are randomly selected from second-year education students who were enrolled in a subject with environmental research output as one of the requirements. An interview with all the participants using active analysis to form themes before and after the conduct of their study was organized. Positive transformation towards the context of the environment and the conduct of research are determined. The inclusion of action research in different disciplines may be done in the context of being pro-environment.

Introduction

Certain practices and activities in tertiary institutes are present to strengthen its programs, especially in teacher education. Such activities include practicum, projects, and action researches. Practicum and projects are already integrated into the teacher education curriculum by the standards of the Philippine Commission on

Higher Education (CHED). It is mandated by the Commission to include units of practicum and projects, in the Professional Education subjects, to enhance the capacity of the prospective professional teachers. Some of the benefits of this inclusion are in the forms of teacher learning and identity (Goodnough, 2011) and problem-solving skills (Darling-Hammond, 2012).

The recent trend in the study of social development revolves around the environment as a conduit of sustainability. As such, certain actors such as those from the European Commission initiated steps toward resource and energy efficiency with the utilization of renewable resources (European Commission, 2010). A condition for this type of action or policy is a pro-environmental behavior of people. Studies have observed determinants with a psycho-social inclination in favor of pro-environmental learning that a strong association exists between social norm, internalization, and guilt with awareness and knowledge of environmental issues (Bamberg & Moser, 2006). The mentioned internalization refers to the internal control of an individual, influenced by external factors, concerning the development of a protective behavior in the field of environment (Pavalache-Illie & Unianu, 2012).

Preceding this trend of internationality is the view of what constitutes the environment itself. Concepts as 'nature' and 'environment' are objectified in the literature in terms as settings and differentiated from being meaningful localities from individuals (Gifford, Steg & Reser 2011). This objectification is crucial because it leads to the way people make a decision toward it in terms of protection and sustainability.

Apparently, action researchers may also be included in the aforementioned curriculum since positive outcomes applying different approaches such as teacher-student tandem, teacher educator-student-teacher dyads or even solo student projects, applying research to the practice of teaching (Davis, Clayton & Broome, 2017) may surface as the course of implication of the action research. Having indicated the importance and weight of action research in the endeavor of student learning, it is also deemed to be a venue of growth of character and identity (Mitchell et al., 2009).

The present study contends the role of tertiary education units in transforming the role of students in pro-environmental behavior. Undergraduate students are involved in this study where their perceptions of environmental issues are assessed. To be specific, the current study deals with exploring the transformative capacity of exposure to environmental issues by allowing these students to identify their perceived research problems and how they will it address through their designed methodology. This gauges a two-pronged perspective where a certain level of autonomy is provided to them and develop their research capability through conducting research while also identifying differences on how their respective environmental concerns may be adjudicated. Due to the existing meanings and definitions of nature and environment as affected by diversified individuals this makes it difficult and crucial to instil positive attitude toward the protection and sustainability of the environment.

The student respondents were interviewed by groups as to their perceived pressing issues subsequently, they are mobilized to gather data in communities in Marikina City and neighboring cities as well. This study focuses on the thematic analysis on the initial part of the process where they form individual perceptions about nature and how, as a group, they decide on how to prioritize the problems for which they will perform data gathering involving surveying and interviews.

This study involves student-participants engaging in action research which according to Mitchell, Reilly, and Logue (2009), is an important experience to become reflexive and knowledgeable on the topic itself. It also leads to becoming more immersed in the future practice of engagement in teaching, research, and identity in general (Goodnough 2011).

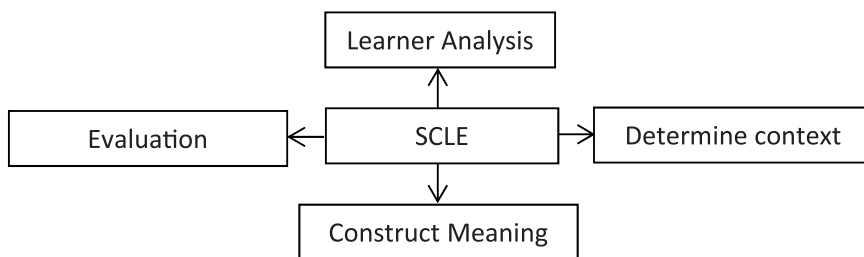


Figure 1. SCLE Framework

The Social Constructivist Learning Environment (SCLE) Framework (Akyol and Fer, 2010) was adopted in this study. Learner analysis, determination of context, evaluation and meaning construction are the four dimensions in creating SCLE. In 'learner analysis', participants of the current study are tasked to explore the needs of their selected environment. 'Determine context' refers to their creation of the objectives of their respective research papers after identifying the key issues they wanted to investigate in their research. On the other hand, 'evaluation' refers to their assessment of the issues arising in their selected research locale. And finally, 'construct meaning' is the ultimate goal of this action research wherein students are expected to formulate their own construct of the term 'environment'.

Purposes of the Research

This exploratory case study aims to understand how students, or the youth in general perceive the environment determining how they also perceive their respective roles given their age and education level. Specifically, it seeks to achieve the following objectives:

1. Determine the understanding of the student participants of the context of "environment"
2. Identify the effect of mobilizing the student participants to conduct

research on their attitude and behavior change

3. Detect the difficulties of student participants in conducting research.

Methodology

Research Design

This study utilizes an action research method using a qualitative approach. Action research is used since the students of tertiary institutes are involved as participants and active actors where they became part of the research process. The authors of the current study had varying roles in the overall context from being the contact course professor to data gatherers and reviewers of colleagues to active workers on minimizing albeit eliminating bias.

Participants

The participants for the group discussion are 21 students, and two of the three researchers who acted as facilitators (Yin 2009). At the beginning of the semester, the entire class composed of 21 students, are instructed to perform a research upon forming a tandem of their choice. Each duo was then free to choose the topic that they wanted to execute granted it is within the subject matter they would cover based on the syllabus prepared. Each tandem is expected

Table 1*Select information on case-study participants*

Student-participant	Sex	Age	Research title
A	Male	20	Level of implementation of rehabilitation of <i>Hinulugang Taktak</i> Falls
B	Male	18	
C	Female	18	Level of awareness and earthquake preparedness of selected Grade 10 students and teachers of Fortune High School
D	Male	18	Level of implementation of solid waste and environmental education in MNHS as perceived by teachers and students
E	Female	18	The significance of environmental education to the youth of Marikina City and their environmental consciousness
F	Male	19	Benefits of biogas from the landfill of Rodriguez, Rizal

to complete the entire research process with a draft publication manuscript to four months (November 2016-March 2017). The interview occurred after they had integrated the final comments for revision before submitting the final form. Six students from the whole group of 21 students are selected through random sampling to be part of the said discussion having the following profile and the topic they had prepared as seen in Table 1.

Data Collection and Analysis

Active analysis, or the analysis that is concurrent with data collection, became necessary as this is a case-study format. Yin (2009) stated that the process will allow early findings to drive further the data collection. The student-participants were interviewed as a group allowed for discussion amongst themselves regarding their concurrence with the individual opinion of the entire research process they had undergone. This is guided by a within-case analysis directed by the conceptual framework and the context of the entire class to which they belong. Themes regarding similarities and differences among the student-participants responses were then sorted to consequentially form a final

set of assertions for the complete analysis (Creswell 2007).

Results and Discussion

During the active analysis, concurrent with the informal group discussion, four themes emerged on how the construction of “environment” manifested in the students. These themes were formulated one-by-one as per discussion with the students. The interviewers and the students were free to use the English language or their mother language (Filipino) because of the recognized proficiency in both languages of all who are involved. The responses were presented here as needed in its actual transcription to which an English translation immediately follows.

I. State of understanding of ‘environment’

The course ‘Physics for the Environment’ is not about the mechanisms and manifestation of Physics concepts within the natural world per se but the centrality of the natural world and how it is influenced and exploited by people as part of the entire ecosystem. The course is ambiguous at the beginning because students were expecting

(based on feedback from cohorts) simple concepts and hypothesized applications of Physics within the theme of the immediate environment. Furthermore, they expressed at this point that they were “envious” of students who major in Chemistry because they are able to “experience the environment” more than they did. As what two of the participants shared,

“Ang akala ko ‘tong subject kong Physics for Environment ay tungkol sa mga bagay bagay na sa paligid na naipapaliwanag ng Physics. Iyon pala ay tungkol sa kung paano umiinog at napapakinabangan ng tao ang kung ano man ang nasa kanyang paligid”. (I thought that the subject ‘Physics for Environment’ is just about the application of physics concepts in the environment. Then I found out that it’s about how people harness what is in its environment.)

“Binalaan kami ng mga kuya; t ate naming sa major. Puro calculations lang sa Physics pero contextualized ang mga problem sa kung ano man ang meron sa environment. Ganun lang. Walang experience with the environment unlike ng chemistry majors na may research talaga sila na pumupunta kung saan saan. (We were warned by our seniors. This subject is just about calculations of theories in physics applied only to environment. That’s all. There is no such thing as experience with the environment unlike chemistry majors having research whenever they go.)

The student-participants frame the ‘environment’ as something to be experienced, to be concretely perceived. As students of Science, they view it as a probable source of information; a specimen source to be tested and experimented. It is a foundation for research.

“Each day nalalaman namin na dapat nga kaming maging part ng nature as Science majors. Lahat naman ng

pinag-aaralan naming theory sa Physics ay galing sa nature. Bakit hindi natin din ibalik ito sa nature?”(Each day we learn that we must be part of nature as Science majors. Hence, all of the theories in Physics came from nature. Why not return it to nature?)

As the course progresses, the students were “surprised” when met with the knowledge that the research they were about to perform requires survey methodology; they were to prepare questionnaires on perceptions, behaviors, and attitudes on the topic domain of ‘environment.’ The instructor then proceeded, according to them, to explain the course’s supposed objective as mentioned. The student-participants state further that they fully understood their instructor’s intention that indeed, people are supposed to be part of ‘nature’ when it is being discussed.

This understanding then developed to include an appreciation of the course objective when the students completed their data gathering and upon writing the manuscript. They were able to study the benefits and shortcomings of certain topics as biogas production, renewable energy and the like. They were holding with them the basic foundation of Physics to make informed choices and attitudes toward certain topics. When they were gathering data, for example, the students determined a community’s agreement with utilizing biogas as an energy source because a landfill is nearby; there were varying opinions on the biogas’ social acceptability. Frustrations among the pair who collected data arose because they knew the benefits and the usual viability that it may be able to bring, but this knowledge was not supposed to be imparted to those taking the survey because it will create an error with regard to bias. The student-participants are now able to appreciate the value of society as part of the environment and as driver of how it can be manipulated toward development with regard to energy sources.

II. Research as a conduit of attitude and behavior change

What the current students expect regarding the coverage of the subject is on the basic concepts of the intersection of 'theories in Physics' and 'the environment as energy and transmission'. As what the instructor of the previous batches implemented includes Modern Physics i.e. nuclear energy. This may have caused some inconveniences for the current students of the subject matter because they thought at the beginning of the semester that they have yet to learn basic concepts within the theme of Modern Physics and yet they were expected to integrate environmental topics with it.

Experience of almost everyone in research practice is doing a 'baby thesis' which is basically a proposal that has an introduction, a brief survey of the literature, and the prospective methodology of a study. They described this activity as 'eme-eme' which is the colloquial youth language register meaning easy, stress-free because all was required of them was to actually prepare the parts without revision. It was simply for the familiarisation of those parts of a research manuscript.

When their instructor announced at the onset of the term that the class will have a research project as their final requirement they indicated they were 'shocked.' They are having apprehensions toward the activity because as mentioned above, they only had familiarity with a likeness of an actual research with a 'baby thesis.' They generally foresaw that it may involve blindly navigating the process; building something from scratch.

They raised their resistance at this point because, based on their knowledge, they are the only class that was required to produce research. Even for the past classes, the course was almost only handled by a

single instructor and it was comprised of lectures, reporting, discussions, and exams for requirements. From here, the current instructor explained that they needed to be patient and persevere; avoid "breaking down from the pressure." This spiel somehow appeased their minds.

"Wag ka muna magreklamo hangga't 'di mo pa Nakagawa" [Do not raise complaints when you have yet to attempt to do anything.]

The instructor also put them at ease by saying he does not expect their works to be 'perfect' and that they will only have to work on continuous improvement and development. Moreover, they know that the current instructor is pursuing his doctoral work and among the faculty members of the Department of Mathematics and Natural Sciences, he is more active in doing research and extension services.

One stated on their learning and application: "...Hindi lang natitigil sa apat na sulok ng kwarto kasi nag-reach out kami sa mismong komunidad eh. Yung pag-browse pa lang namin sa internet ng background sa research namin may karagdagannang knowledge agad. Hindi lang basta tinuro lang ng kung sino dito sa room, may nadagdag pa. Plus, masasagot pa yung tanong namin sa research. Ang daming nagawa nung research nayan para madagdagan yung alam namin at lumalim pa yung discipline at appreciation for the environment." [(Learning) does not end in the four corners of a room because we reached out to the community. Even when we were just browsing the internet to have a background of our research we were already learning. Things were not just taught by anyone. We were complying with what we asked within our research; it was doing so much for us, our discipline and appreciation of the environment.]

III. Difficulties in performing research

Complaints revolved around resource constraints. First is on time resource. They are enrolled in about 24 units of coursework with respective requirements. For the current course, every chance break between classes were spent it on doing work for the research; “Nangangarag kami kasi tuloy-tuloy ang deadline... kasi kung titignan mismo yung period of time. Kasi hindi pa naman namin talagang gamay [yungproseso] so hindi pa namin ganong kayang i-manage kung gano karami yung gagawin namin sa subject. So makikita mo talaga kaming nangangarag basta may mapasa lang. Kasi pagka submit ire-revise tapos pagnatanggap yung ni-revise deadline naulit.” [We were so stressed because of the continuous deadlines... the period of time in between them are close. We are still familiarizing ourselves (with the research process) so we cannot manage well how much time we have to spend for our class. You would see us so stressed out just to produce something. When we are able to submit, (the instructor) put revision notes for some time and when we got this, it was almost deadline.]

What added to their anxiety was the need for applying statistical treatments to their studies: “Medyo nabigla lang kami lalo na sa Statistics kasi second-year pa lang kami. Kasi sa ProfEd lang may pasakalye pa lang tapos ile-level up pag may research na kaya pag nag ProfEd na kayo sabini (instructor) sisiw nalang yan” [We were caught by surprise because of Statistics because we are just in our second year. In (forthcoming) ProfEd (Professional Education course) they provide a brief background on Statistics and when you do your research, that is the only time it ‘levels up.’ So (our instructor) said that when we do take that course eventually, we would find it easy already.]

Continuous consultations had been done by the students which they are grateful. They cited that the instructor was there

during topic identification, the possible statistical treatments, and even their way of writing is in constant scrutiny for the research’s development. One central note to this process is that the students are open to criticism. They feel and know that it is constructive and far from simply being vindictive in the part of the instructor. On the other hand, the instructor’s openness and accommodation are provided well. As he sees the importance of the entire process of research as he experiences it on his own; he provides it to others as well.

On the revision of their works, they felt like it is almost unending as mentioned above; this is taking for the student-participants because it consumes much time but also much of their finances. Because what had happened was revising the drafts was done chapter by chapter, therefore, this piecemeal approach involved much typewriting in shops because some of them do not have their own computers and subsequently the printing of their works. Also, because the approach for all the research topics involved questionnaires, much of their respective budgets were allocated to it and it led to them spending time encoding among others. They insist that doing the research was ultimately rewarding because they can concretely view how far they have gone and actually produced a full manuscript; it is simply they underestimated the management of student finances.

Notwithstanding these difficulties in time and finances, they mentioned that they will encourage other students to take it because they will learn much and it is fulfilling.

IV. Attitudinal transformation on participation

“Bilang future teacher, hindi kalang basta magaling makinig at magsalita; dapat magaling kanarin magtanong.” [As future teachers, you are not just trained to

become better in listening and speaking; it is just as important to be better in asking the right questions.]- Student-participant 6

They hold their appreciation of their research practice because, relative to others among their cohort albeit their peers from higher year levels, they 'learned this much earlier than the others.'

"Kelan malalaman 'pag fourth-year pa? Regularly 'pag fourth year pa as part nung formal thesis class. Kasi nakikita na namin yung mga guma-graduate pati yung sa ibang school para mag research, gumawa ng thesis yung iba umaabot sa ibang lugar nag-ga-gather ng data. Kami nga dyan lang sa labas-labas mahirap na eh. Eh pano pa yung sa malalayong lugar." [When will you learn it, when you are at your 4th (and final) year? At that level, it is only during your thesis class. We see students who are about to graduate (in this college), and even from different schools that when they do their research they reach different places simply to gather data. We only gathered in places near the college and we already found it difficult; what more if it were at farther places.]

They will pass on what they learned cognitively and what they developed through practice thus far; which is research on environment. "...May background ako sa research... Kung ite-tengga natin yung nalalaman natin, kakalawangin lang yan. 'Di yan napapakinabangan. Ano yung purpose nung pinahirapan natin, yung pinahirapan tayo? Pinahirapan tayo dahil lang dun pero pinahirapan tayo para may matutunan. Anoyung purpose nun yung mapasa yung grade, ganun? Siempre may purpose yun, yung maipasa yun sa ibang tao or basta mapakinabangan. Kaya yung research nayan importante sa field ng teaching. [I already have this much background in research, if I do not use it, I will just become rusty. What was the purpose of all the difficulty; that things were made difficult for (the class)?

The class was made difficult just for the sake of being difficult, it was made that way to make us learn. It was not just so we can attain a grade. Of course, there was a purpose for it all. It is ultimately so we can transfer (our knowledge) to others or as long as it becomes useful. This is why doing research is important for the teaching profession.]

Conclusion

The present study aimed to understand how the students perceive 'environment' by determining how they perceive their roles given their age and education level. It is often cited that the deterioration of the environment is propelled by the irresponsible behavior of people. Behaviour is greatly influenced by attitude, educating adolescents on the environment is important in formulating views on their own effect on actions and policies. In the current study, although the effect of the change is unmeasured, the student-participants' definition of the 'environment' exhibited transformation. Because they are oriented in the physical sciences, they held the importance of the environment initially as the location where subjects and specimens are to be observed. It is composed of the natural environment where it is meant to be apart from themselves. After which, upon completing their research until the writing process, the result unraveled whereby their own appreciation of the environment is increased. This is said here because they see that in their respective surveys, they find it frustrating, almost irritating them, that people could not care less about their surroundings. They recognized that they too are a large part of what composes the 'environment' and also how nature is actually being exploited for the purposes of those living in specific locales.

Directed research themes, in the current case regarding energy creation topics, is how this study is performed. The

concepts are lectured and discussed in class, there is a consensus among those who had participated in the interview that they gained realization of the course's importance when they themselves were in the field and gathering data. The information that they possessed that was taught in university regarding Physics for the Environment diverges vastly from those who became their respondents. They are not diminutive of them but it frustrates them that the information should be made known to the public because it pervades their lives.

Research in this context then becomes an important tool toward behavioral change apart from attending lectures and seminars. As mentioned above, the understanding and appreciation of environmental concerns are heightened positively. Furthermore, research transformed the behavior of student-participants as being students in the tertiary level. They became conscious of learning from experience what they are learning through concepts in the classroom. They gathered literature, attempted to answer questions in relation to their topic's objectives among others. Difficulties were met along the process especially with the resources of time and finances because, being students still, both are very much limited as mentioned above in the results of the interview. Notwithstanding this context, it is focal to experience these as mentioned by Bryant and Bates: "It is the process of questioning, resisting, challenging, and risk-taking that pushes [students] to engage in and understand the ways in which action research can inform... Discomfort and uncertainty establish conditions for change in thinking and practice." (2010, 316)

Recommendation

The student-participants had observed as well that previous cohorts of students had difficulties in the individual components necessary for quantitative research as survey

instrument creation, data gathering, and statistical treatment. They realized that they will avoid such degree of difficulty because they already have experience in such a process. What they had pointed relates to the weight of development with regard to curricular integration. Research may have to be refocused in other course areas for the students to improve on research skills for different purposes and also, the subject matter can be internalized further as with the current theme of pro-environmental behaviour.

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