

Developing Academic Culture through Conducting Empirical Projects Within a Research-Based Learning Approach

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A main task of teaching at universities is not only the imparting of professional knowledge of the particular scientific domains, but also the imparting of the scientific methods how knowledge is constructed and validated through scientific research. Concerning the subjects of Psychology and Early Childhood Education, this scientific methodology comprises of the way that scientists conduct a methodologically controlled empirical study in order to answer a particular research question. The core of this empirical procedure is the selection and planning of a research design that enables the empirical analysis of the research question (e.g. experimental design, intervention design, correlational design), the planning of recruiting a suitable sample of people as well as of selecting suitable research methods for assessing the constructs in question (e.g. interviews, questionnaire, observation) and their analysis.

One possibility for imparting students of Psychology and Early Childhood Education the abovementioned empirical methodology also practically is the realization of small empirical studies within a university seminar (e.g. Garde-Hansen & Calvert, 2007). Students are scaffolded in acquiring the scientific methodology to a selected research question, e.g. in planning, conducting, analyzing and documenting an easy to manage empirical study. Such a teaching method is called a “research-based learning approach” (Ifenthaler & Gosper, 2014; Kazura & Tuttle, 2010).

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INTRODUCTION

One of the tasks of college is to do teaching and research. Both could be done together through a research-based learning approach. Students need the acquisition of scientific knowledge about the proper domains as well as about scientific methods how this knowledge has been constructed. Scientific methods could be learned and used to solve knowledge and life problems. It means that a scientific knowledge should be useful to both yourself and others.

In developing countries such as Indonesia, the culture of research in depth in accordance with the academic ethics of research has not yet achieved very satisfactory results, although currently research publications from Indonesia have begun to show significant increase. The report of the Minister of Research, Technology and Higher Education indicates that Indonesia's scientific publication is ranked third among ASEAN countries. The number of Indonesian international scientific publications indexed globally rose significantly to 9,349 documents (cutoff date July 31, 2017). Indonesia's position exceeds that of Thailand last year. "Soon, the international scientific publication of Indonesia surpassed Singapore in the number of 10,977 publications," (Nasir, 2017). In the Permenristek Dikti Number 44/2015, Master and Doctoral students are encourage to conduct international scientific publications.

Based on the Indonesian Qualification Framework (Law Republic Indonesia No. 12/2012) bachelor degree graduates should acquire the following competencies: 1) capable to apply science, technology and art within her/his professional domain to various situations faced during solving a problem, 2) mastering in-depth general and specific scientific concepts of a certain domain and capable to formulate related problem solving procedures, 3) capable to provide several alternatives for problem solving based on information and data analysis and to make strategic decisions, 4) responsible for her/his own job by taking responsibility of the attainment of organization's performances. Compared to this, Master degree graduates should acquire the following competencies: 1) capable to flourish knowledge, technology, or/and art within her/his professional domain through research for producing innovative and effective problem solutions, 2) capable to solve science, technology or/and art problems within her/his professional domain through an interdisciplinary approach, 3) capable to organize research and development useful to science and society as well as obtain national and international

recognitions. For doctoral graduates they should: 1) capable to cultivate new knowledge, technology, or/and art within her/his expertise's or professional domain through research for producing creative, original and reputable creation, 2) capable to solve science, technology or/and art problems within her/his scientific expertise through inter-, multi- or transdiscipline approach, 3) capable to organize, lead and flourish research and development useful to science and valuable to human civilization as well as obtain national and international recognitions.

Based on these hopes and realities, it is very important for lecturers and professors to teach students from bachelor degree to understand and apply scientific methods in order to develop scientific knowledge through college seminars in universities based on problems that occur in the field or empirically.

Research-based learning is based on a constructivism philosophy that includes 4 (four) aspects: learning that builds student understanding, learning by developing prior knowledge, learning which is a process of social interaction and meaningful learning achieved through real experience. Research is an important tool for improving the quality of learning. Research component consist of: background, procedure, implementation, result of research and discussion and publication of research result. All of which provide important meaning that could be seen from several points of view: problem formulation, problem solving, and communicate the benefits of research results. It is believed to be able to improve the quality of learning. Research-based learning approach is a learning method that uses authentic learning, problem-solving, cooperative learning, contextual (hands-on & minds on, and inquiry discovery approach guided by constructivism philosophy (Roach, Blackmore, Dempster, 2000).

Here are some strategies for integrating learning and research that are empirically developed at Griffith University (Griffith Institute for Higher Education, 2008):

1. Enriching teaching materials with lecturers' research projects and their methods as well as results. In their seminars, lecturers can describe the questions, methods and results of their research projects as a real example of doing research, which is expected to support learners in understanding research theories, methods and the procedure of doing research. In this activity, the values, ethics, and practice of research in accordance with the scientific community can be used to provide inspirations for learners.

2. Using the latest research findings and tracking the history of recent scientific knowledge. In this process of learning, the latest research findings obtained from the literature are discussed to understand the appropriate subject matter. The dynamic of the development of scientific knowledge is presented in the lectures as a series of historical developments of this knowledge. Thus, learners could acquire an understanding that current policies and practices could be done and developed nowadays, because of policies and practices that have been developed previously.
3. Enriching learning activities with contemporary research issues. This learning process could be started by asking students to present actual research issues that represent the state of the art in the specific research domain. Furthermore, learners are asked to discuss the application of research issues to solve real problems in life.
4. Teaching research methodology in the learning process. This strategy could be implemented by doing the following steps:
 - a. Increase learners' understanding of research methodology.
 - b. Designing teaching materials by incorporating research methodologies for analyzing selected research questions, so learners can apply them to solve real research problems.
 - c. Designing teaching materials with various research methodologies related to some of the latest research issues, so that learners can learn to evaluate the issues of research
5. Enriching the learning process with research activities on a small scale. In this learning process, groups of learners are given the task of doing joint research. Thus, learners could apply and improve their skills and knowledge of these activities. With this activities, the acquisition of a research culture could be more improved than conducting research projects only individually. Further activities could be developed for example:
 - a. Learners are required to perform data analysis of research activities they have done.
 - b. Lecturers provide questions so that learners need to conduct a literature search, apply research methodology, collect data, document the results of their analysis, and discuss their research results and their methodological validity.For a successful application of these research activities, it is necessary that lecturers demonstrate the usage of research skills and knowledge that have been studied in the semester of the previous topic.
6. Enriching the learning process by involving learners in institutional research activities

7. Enriching the learning process by encouraging learners to feel part of the scientific community in the faculty/department. In this strategy it is endeavored that learners feel as part of the scientific community in their department or faculty.
8. Enriching the learning process with the values that must be owned by researchers. The values that must be owned by researchers should be understood by learners. These values include: objectivity, respect for other views, tolerance of uncertainty, analytical skills, and rewards for research findings.

Implementation strategy models of a research-based learning approach could be developed in accordance with the discipline and a development of research culture that has developed in the particular institution. One thing that should be remembered is that the research-based learning approach is not only aimed at developing the ability of learners as a reliable researcher but also as a researcher who has character and values that are universal.

RESEARCH METHOD

A research-based learning approach could be developed also in the field of early childhood education and psychology at State University of Jakarta. In this case, the seminar on prosocial behavior and morals can become a very important interface especially in the field of early childhood education because it is related to the inculcating of good life values in children from an early age. Students of early childhood education and psychology could be directed to use strategy number 5 as mentioned above. They could find empirical problems in preschools such as child care, play groups and kindergarten inductively or define the research problem deductively. If small research projects start by applying inductive thinking, students could go directly into the field to identify problems of practical relevance.

The method of video observation is one important method that can be used because it documents children's and teachers' behaviors and interactions in everyday activities that can be taken for an in-depth analysis in which the past activities can be observed again and again. When students are provided with video documentations of these everyday activities in preschool institutions, they can identify real and existing problems as well as research questions within the observed contexts. They can search for and find a suitable theory that fits to the

identified research question as well as to the particular contextual conditions of the field. Then, they select a suitable methodological design, e.g. a descriptive, correlational, experimental or an intervention design as well as suitable and feasible instruments for assessing the variables in questions. These variables depends on the research questions. They could focus e.g. the prosocial or moral behavior of the children or the classroom management of teachers. After planning a feasible empirical study also in agreement with the colleagues in the educational institution they visit, students conduct the study and, afterwards, start to analyze the conducted data by adopting quantitative or qualitative methods of analysis that depends on the chosen instruments and research questions.

Within the project in question, it is planned to conduct a university seminar in line with the research-based learning approach and to use the analysis of video material. The video vignettes were videotaped in child-care and preschool centers and contain everyday activities of children and teachers in these child-care and preschool centers. They enable to exemplify the use of correlational and experimental designs as well as observational methods. The lectures will provide the students with a theoretical impact on the development of prosocial and moral behavior in early childhood. They will instruct them to derive selected research questions from this theoretical background and to plan and conduct a suitable observation study using these videos while applying the empirical methodology to their research project.

For example, some potential research questions about the prosocial and moral behavior of early childhood in preschool can be: 1) which social and moral development stages of children age 2 to 6 years can be identified in their everyday activities? 2) how are prosocial and moral behaviors related to the educational attempts of their teachers? 3) is there a correlation between prosocial behavior and moral behavior in children aged 2 to 6 years? Theories required for analyzing such research questions are related to the social and moral development of early childhood, and the prosocial and moral behavior of children. The required scientific knowledge also comprises of knowledge about methodological designs, research methods (observation, interview, and questionnaire) as well as qualitative and quantitative analysis methods. Data analysis based on observations could be started by generating coding manuals based on an operationalization of the constructs used for the particular research questions. A coding manual contains the relevant variables, their scientific

labels and definitions as well as concrete examples of the values of each variable. Then, students are guided how to view the videos, write transcripts and code their observation along with the coding manual. They choose the type of data reduction, e.g. a quantitative analysis with e.g. the statistical package SPSS or a qualitative interpretation. Finally, students evaluate the results of their data analysis and discuss the interpretations of their results in the light of the used theory and literature. They also discuss the validity of their methods and results and their potential limits.

DISCUSSION

The expected results of such a research-based learning approach are that students will get familiar with scientific thinking and problem solving as well as will acquire a more profound understanding of empirical studies in the domain of Development Psychology and Early Childhood Education. The results could be presented in lecture seminars, and lecturers and students could ask questions, give feedback and suggestions for the research that has been done by each student. Students could improve the results and interpretations of their empirical study through considering the inputs from lecturers and students. In addition, research results could also be used by the professionals of the educational institutions in which the students conducted their research.

CONCLUSION

Based on the above-mentioned explanations, it can be concluded that research-based seminars Bachelor curriculum are a place to teach and acquire the academic culture of a specific scientific domain. This can be achieved through providing students with concrete little research projects that they have to plan, conduct, analyze and document in a research report and to scaffold them during this research process. The use of video documentations of everyday activities in preschool centers could be a possible opportunity to organize such a research-based learning, but it can also be done through direct observations during fieldwork. Students can present their research results as talks in front of the audience of the fellow students of their seminar. Taken together, developing academic culture through

conducting empirical projects within a research-based learning approach can be well adapted to university seminar and the teaching of Bachelor students of Psychology and Early Childhood Education.

The implications of their learning outcomes for students are that they become able to solve potential problems in their professional domain they are educated to. The implications for the institutions in which these little research projects could be conducted that their results may contribute to solve existing problems in the involved educational institutions. When this is the case, academic research changes into action research that results not only in an acquisition of competence on the side of the students, but also in an acquisition of problem solving on the side of the involved educational institutions.

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