



Management Practices of Pre-College Research as Basis for a Policy Framework

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ABSTRACT: Analysis on how curriculum is managed provides a rich source of data for policy recommendations at the local, regional, national, and international level. This study excerpt focused on the management practices in the implementation of research subjects in the Philippines. Participated in by 1, 250 college students who are mostly graduates of the general academic strand from public high schools, female, and are academic awardees, this quantitative-survey study found baseline data that writing and defense as 2 complementary activities form part of research management practices implemented in the Philippines. However, findings revealed a consistent 2% of the sample population who do not participate in these practices implying some opportunities for improvement in school-based research management. The researchers recommend various mechanisms to address this opportunity, viz, the adoption of both the START Approach and the 4-AA Model, and the establishment of a School-based Compendium for Student-led studies.

Keywords: K to 12, Management Practices, Research Senior HS Research, Updates

INTRODUCTION

On Curriculum Evaluation in General

Camara (2020) claimed that the perspectives of student-clienteles in curriculum evaluation is a significant and healthy approach to curriculum improvement. This means that any attempt to evaluate a curriculum, and by extension, any other human activity provides for assessment of its customers or clienteles. In the field of education, the major clienteles are the students themselves. This is considered healthy because, as Kaufman (2020), suggested based on the findings of his research, teachers do not always have access to high-quality curricula that reflect key elements of states' college and career-ready standards. On the same note, Copeland and Cosbey (2008) claimed that research strongly supports including students with extensive support needs in general education setting and providing them access to it, and they claimed that there is limited research indicating how to provide them authentic access to such a curriculum. This means that involving the 'customers' and their 'taught curriculum' will provide a rich source of baseline information on how the planned curriculum went.

Following Tyler's Four Basic Principles in Curriculum Development, the following considerations should be made: (1) Purposes of the school, (2) Educational experiences related to the purposes, (3) Organization of the experiences, and (4) Evaluation of the experiences. As impressed to us, Tyler considered evaluating the experiences as one indicator of curriculum development. Considering that curriculum evaluation is a careful, deliberate and organized process, indicators are not readily available, particularly if the scope of evaluation is at least at the regional level. Many factors have to be included especially when evaluation is done in concurrence with curriculum itself and instruction. However, the researchers believe that this set-up is not required to practically effect local but impactful changes. Not one researcher could study all areas, thus, it is necessary that a study on curriculum be a concerted effort of all researchers who study individual parts to make the whole.

On the other hand, Taba improved such an ideology of Tyler and came up with her 'Linear Model' that put emphasis on the belief that teachers who teach or implement the curriculum should participate in developing it, thus, 'grassroots approach'. Tyler's 'four', then, was replaced with Taba's 'seven' major steps, viz: (1) Diagnosis of learners' needs and expectations of the larger society, (2) Formulation of learning objectives, (3) Selection of learning content, (4) Organization of learning content, (5) Selection of learning experiences, (6) Organization of learning activities, and (7) Determination of what to evaluate and the means of doing it. What is a good assumption of this Model, as implied by the steps, is that the teacher has the power to 'select learning experiences' as an input to curriculum evaluation. This implies that while curriculum could refer to the 'total learning experiences of individuals not only in schools but in society as well (Bilbao, 2008), the teacher could evaluate the curriculum in terms of several or chosen aspects only.



Opportunities for Improvement in Research Management in the Philippines

In the Philippines, research management for the Commission on Higher Education (CHED) is under the Research Management Division of the said Commission. This RMD is mandated to (1) direct and manage the formulation and implementation of the higher education Research and Development Agenda, (2) provide research infrastructure and enabling policies for promoting research and development, (3) promote the utilization of research outputs within the framework of Intellectual Property laws and policies, (4) evaluate and assess research and development extension and innovative project proposals related to higher education and recommend projects to be funded, (5) monitor in collaboration with the HEDFS, and submit periodic reports on the status of CHED-funded projects, and (6) conduct or outsource research with policy inputs to CHED. Obviously, the Commission has an organized policy framework and directions in the management of its research activities. As a result all units under CHED including State Universities and Colleges, have formulated its R&D Agenda and its manner of implementation. Despite this 'strength' in our policies, however, no working national policy appears to cater to college students and policies are directed only to personnel.

In the case of Basic Education, the Philippines has the Department of Education (DepEd). Research Management under DepEd is contained in DepEd Order No. 16, s. 2017 entitled 'Research Management Guidelines'. The Order states that such policy is built on the gains in evidence-based decision-making from various education reforms or initiatives to strengthen the culture of research in the Department. This policy contained guidelines that improve its fund-sourcing mechanisms and reinforce the link of research to education process through research dissemination, utilization, and advocacy. Moreover, the Policy aims to provide guidance in managing research initiatives in the national, regional, schools divisions, and school levels. On the same line of reasoning, no working national policy is available for elementary pupils, junior high school students, and senior high school students. While it is true that policies are in place for the teaching and non-teaching staff, the researchers believe that at least a working school-level policy for students would be favorable for nation-building.

Goal of the Study

This study [excerpt] focuses on the management practices of pre-college research, or the Senior High School research subjects, in order to draft a working policy or framework for its implementation at least at the school level. Variables were considered including number of research works written and defended as individually or in groups, as well as geographic and gender distribution, pre-college school type, research awards received, research subject preference, senior high school track and strand.

METHODOLOGY

Research Design and Sampling Technique

This study employed descriptive-status type of research because (descriptive) it attempts to observe and measure the characteristics of the research participants without any form of intervention or manipulation to any prevailing conditions that affect them but (status) with possibility that these characteristics may be different with other populations and with the fact that these characteristics are present to the population under the study and during the data-gathering period. The sampling technique employed is simple random sampling for convenience and for wider geographical reach especially at a time when mobility of researchers is limited or restricted by Philippine IATF guidelines relative to the control of covid-19 pandemic.

Population and Instrumentation

The population of interest are (1) Filipino K to 12 graduates who are (2) enrolled in college during the data-gathering period. In this study, 1, 271 students participated but only 1, 250 of their responses were considered as data, because the remaining 21 responses were college students but were not K to 12 graduates. The research instrument is self-developed by the lead researcher. The research instrument underwent 2 major revisions and was finally rated as 'Very Highly Valid' ($M=4.51$) by experts of the Philippine Association of Research Practitioners, Educators and Statistical Software Users (PARESSU), Inc [SEC RN: CN2019001170]. The Ethics Board of the PARESSU, Inc rated it 'Approved for Administration' dated October 10, 2020.



Data-gathering Procedure and Data Analysis

The data-gathering technique employed is the survey-questionnaire technique which was administered digitally all over the Philippines from October 15 to November 15, 2020 primarily through Messenger and Gmails. Further, a social media invitation with the link of the google form was also posted on the website of PARESSU, Inc to ensure that every netizen who possessed the inclusion criteria is given an opportunity to participate in the study. For data analysis, the data for this excerpt – were subjected to simple frequency counts, and percentage and chi-square test of independence (crosstab) using SPSS v25.

RESULTS AND DISCUSSION

Geographic Distribution. In terms of regional distribution, the participants of the study were those who possessed the two inclusion criteria, namely, (1) are K to 12 graduates, (2) presently enrolled in college during the data-collection period. Based on these, (N) 1, 250 were considered from 1, 271 responses. The 21 invalid responses were identified because of ‘screening questions’ integrated in the survey-questionnaire. The data showed that in terms of regional distribution, there were nine (9) regions which participated in the study. Majority of the participants came from Region I (802, 64.2%). Regions II, III, IV-A and NCR had more than 100 participants, while a few came from Regions IV-B, V, CAR, X.

In terms of provincial distribution, there were twenty-six (26) provinces and a city which participated in the study. Majority of the participants were from Pangasinan (713, 57.0%). Nueva Ecija, Manila, Ilocos Norte, and Rizal had more than 50 participants. There were participants from La Union, Abra, Mountain Province, Tarlac, Benguet, Bulacan, Misamis Oriental, Ilocos Sur, Aurora, Camarines Sur, Pampanga, Zambales, Apayao, Cavite, Laguna, Bataan, Cagayan, Romblon, Pasay, Ifugao, Nueva Vizcaya, and Isabela. In terms of municipal, university and course distribution, requests for data could be made to the author/s – but for this article, these are not reported to ensure privacy of the participants. This implies that the study, while attempting to involve the whole Philippines, is limited to the number of participants that were reached out through digital communication as earlier mentioned.

Gender Distribution. In terms of gender distribution, majority were female (783) respondents (62.6%) and 437 male respondents (35.0%). A very few of the participants preferred not choosing between the options male or female and chose the option ‘Prefer Not to Say’. It can be deduced from the gathered data that female students outspaced male respondents. Since research subjects do not only call for the pursuit of academic career and advancement of knowledge, but also demand students’ engagement in the contents, processes, and problems (Imafuku, R., et al., 2015), only those who exert more effort endure. Grassgreen (2013) stressed that female students outnumbered male students not because of their abilities, but because the former have better social and behavioral skills than males and they exert more effort and are more engaged in school works. Moreover, as revealed by the study of Ocampo and Fontanos (2019) in the 14th Philippine National Statistics Conference, female students consistently sustain basic school participation and were able to finish the program than males. Further, the data imply that there are respondents who were ambivalent to divulge their gender preference in the conduct of the study. This is attributed to the fact that the culture in the country still considers the inclusion in the third sex a deviation from the norm.

Pre-college School Type. Majority of the participants graduated from public senior high schools (338, 912, 73.0%) while almost a third of the population graduated from private senior high schools (27.0%). The data imply that since the Philippine government offers free education to all basic and tertiary public schools, Filipino students opted to avail the free-education program of the government by selecting public schools than their counterparts.

Awards Received in Senior High School. Majority of the participants were recipients of the ‘With Honors’ award (680, 54.0%). Almost one-third did not receive any academic award during their senior high school (362, 29.0%), while half of their population were recipients of ‘With High Honors’ awards (191, 15.3%). A handful received the ‘With Highest Honors’ award (17, 1.4%). When asked whether they received an award



in research of any kind or type during their commencement exercises, majority answered yes (644, 59.5%) while many still did not receive any research award (506, 40.5%). It is apparent on the gathered data that the respondents take their studies seriously because they did not only meet all of their schools' requirements, rather, exceeded the criteria set by their respective schools and were able to receive awards at the end of the school year. Moreover, it can be gleaned on the data presented that majority of the student awardees were engaged in research as evident on the research awards they received during their commencement exercises.

Research Subject Preference and Non-preference. When asked which research subject did they like the most, most of the participants answered 'Research 1' (481, 38.5%). Interestingly, the number of participants who prefer Research 2 and Inquiries, Investigations, and Immersion are equal (313 each, 25.0%). Still, more than a tenth of the population said that they prefer (or love) all of the 3 research subjects (143, 11.5%). When asked which research subject did they least like, most of the participants answered 'Research 2' (423, 33.8%), and this is one-third of the sample. The number of participants who liked research 1 least (359, 28.7%) almost equals the number of participants who liked Inquiries, Investigations, and Immersion least (350, 28.0%). Almost one-tenth of the sample (118, 9.4%) said 'No' that they did not like any of the 3, which means they are not choosing any of the 3 to consider as 'liked least'. The data suggest that most of the respondents prefer Research 1 as compared to their Research 2. As stipulated in the K to 12 Basic Education Curriculum for Senior High School (DepEd.gov.ph), Research 1 focuses on developing critical thinking and problem-solving skills through qualitative research while the Research 2 dwells more on quantitative kind of research. Since the latter is deemed to be more structured and demands schema in Statistics, the results revealed that the respondents prefer the less structured kind of conducting research, hence, opting to favor qualitative than the quantitative.

Senior High School Track. Almost 98% of the sample graduated either from the Academic Track (973, 77.8%) or the Arts and Sports Track (257, 20.6%). It can be gleaned on the data that majority of the respondents are learners who were not yet decided on what course to take in college. Further, they were still on the stage of deciding about their preferred degree once they step into college. However, it is worthy to note that even though they were still doubtful on their careers, they were serious exerting efforts on their school requirements as evinced on the previous discussions of the results. More so, their dedication on research endeavors during their high school years.

Senior High School Strand. Most of the sample graduated from the General Academic Strand (366, 29.3%). This is followed by graduates of Business, Accountancy and Management (259, 20.7%), then by Strands under Arts and Sports (228, 18.2%), then by graduates of Technical-Vocational Livelihood Strand (222, 17.8%), and from graduates of Humanities and Social Sciences (131, 10.5%). There was a very handful participation of graduates from the Science, Technology, Engineering and Mathematics Strand (44, 3.5%). It can be gleaned on the data that all of the strands offered in senior high school in the country are represented in the conduct of this study, though most of them come from the General Academic Strand. In light of this, it is worthy to note that whatever strand the respondents are enrolled in, they engaged themselves in research works. Further, as discussed previously, they never take their research works for granted as they received various research awards during their commencement exercises and majority were recipients of 'With Honors' award.

Research Works Written (Table 1). When asked on the number of research works they had written as an individual, half of the sample said they had not written any research work as an individual (623, 49.8%). Many have written at least one individual research work (283, 22.6%), some have written at least 2 individual works (211, 16.9%), and still a number have written at least 3 individual works (84, 6.7%). Surprisingly, a few of them managed to have written 4 individual research works (49, 3.9%). It is apparent on the data presented that the respondents are equipped with necessary skills in research writing since they were not only able to produce a singular research output, but a number of research works. Hence, it is worthy to note that the senior high school students in the country are geared and are prepared by their respectively schools to manage and be able to produce and write their research outputs.



Table 1: Number of Research Works Written (n=1, 250)

Number	Individual		Group	
	f	%	f	%
None	623	49.8	23	1.8
1	283	22.6	204	16.3
2	211	16.9	437	35.0
3	84	6.7	346	27.7
4	49	3.9	240	19.2
Total	1250	100.0	1250	100.0

They were also asked on the number of outputs which they had written as a group member. Most of the participants have written 2 research works as a group member (437, 35.0%). Most still managed to write 3 group research works (346, 27.7%), and almost one-fifth of the sample was able to write 4 group research works (240, 19.2%). A few answered they had not written any research work (23, 1.8%). The data suggest that the respective schools of the respondents promote collaboration among their student-researchers. It is evident on the gathered data that majority of them managed to produce 2 or more research outputs if they collaborated with their classmates. As emphasized by Faculty Development and Instructional Center, USA (2021), collaboration in research maintains a social environment which promotes cooperation and trust, hence, producing more quality research outputs.

Research Works Defended (Table 2). When asked on the number of research works defended individually, most of the participants answered that they had defended as an individual at least 2 research works (421, 33.7%). This is followed by those who have defended as an individual 1 research work (369, 29.5%). Further, almost one-fifth of the sample said they have defended as individual 3 research works (217, 17.4%). One-tenth of the sample have defended as an individual 4 research works (139, 11.1%). Furthermore, 104 of the sample (8.3%) have not defended as an individual any research work. It can be gleaned on the gathered data that the respondents did not only cease at completing their research outputs but were also able to defend them. In relation to their research works written, it is apparent that the student-researchers were also prepared by their respective schools on how research works should be presented. But it is more worthy to mention that they did not only defend a singular research output, but a number of research works.

Table 2: Number of Research Works Defended (n=1, 250)

Number	Individual		Group	
	f	%	f	%
None	104	8.3	23	1.8
1	369	29.5	204	16.3
2	421	33.7	437	35.0
3	217	17.4	346	27.7
4	139	11.1	240	19.2
Total	1250	100.0	1250	100.0

They were also asked on the number of research works which they have defended as a group member. Most of the participants have defended as a group member 2 research works (437, 35.0%), followed by those who were able to defend 3 (346, 27.7%), then those with 4 (240, 19.2%), then those with one (204, 16.3%). Still, a few have not defended any research works even as a group member (23, 1.85). The data also imply that the respective schools of the respondents do not only promote collaboration in accomplishing their research outputs, but also in defending their works. It is a practice which does not only help student-researchers finish their respective programs, but also help them receive various awards in research, as presented in the previous discussions, during their commencement exercises.



IMPLICATIONS TO FUTURE DIRECTIONS ON EDUCATION

The results further imply that there is a need to strengthen the implementation of existing policies and programs in research in basic and higher education. Though majority have experienced doing research, utilized research materials and received research awards during graduation the impact of what research have done to prepare these senior high school graduates is still an area where policy and programs will be focused. An area to be considered in the development of policies, standards and guidelines which are also responsive to the current situation such as Covid-19 pandemic will include the following Agenda Setting, Research Design and Implementation, Ethics, Capacity Building, Resource Mobilization, Structure Monitoring and Evaluation and most importantly research utilization.

Agenda Setting, Research Design and Implementation is concerned with the generation of research, and the policies and technical support behind them. This area deals with the ability of the basic and higher education institutions to encourage generation, review, approval and support research protocols and projects that are aligned with predetermined priority issues and concerns. Importantly, this area is involved also with project monitoring and how efficiently these are achieved.

Ethics always determines if there is adherence to universal principles and values of ethics and that the rights and dignity of research participants are upheld while Capacity Building is concerned with expanding resources to enhancement and upgrading technical and ethical know-how on research by all professors and teachers basic and higher education institutions in order for them to be able to prepare young researchers well. Regular training on the various areas of research, technical support and availability of learning resources and equipment that facilitate development and generation of studies aligned with the research agenda are provided. Continued support and motivation for researchers to ease and expedite the conduct and development of investigation must be evident.

Further, priority setting on budget allocation must follow standardized procedure and anchored on investigative studies aligned with the research agenda. Since linkages can expand research resources and compensate for the limitations of the institution, necessary collaborations may facilitate achievement of exemplary and relevant -related research outputs and there is a need determine the strengths, weaknesses and/or areas for improvement in policy making and policy implementation of the institutions. Finally, research utilization concerned with how research results impact on identified priority areas not only on local and national levels but on the global sphere as well. Research utilization determines how research outputs/outcomes are made use of for the benefit of the public. Research utilization is involved with what or how such research outputs change or affect existing practices or policies. Research utilization is also concerned with providing systems of information and databanks through which these results can easily be accessed or disseminated. Research outputs give rise to further investigative studies on much larger spheres such as bigger collaborations both nationally and internationally. Presentation in scientific fora and other media of public information including publications in journals, citations, and awards are also considered as reflections of outstanding research outcomes.

CONCLUSIONS

The findings showed conclusive evidence that indeed, on the ground, there is a consensus that a local research management policy is implemented in the schools, particularly in the submission of write ups which is done individually or in groups as well as defending their research works practiced either individually or in groups. However, the study that almost 2% of the population did not write any individual work nor a group work which implies that there could be schools who have no working policies in the submission of write-ups. This 2% translates to the ratio 1:50, i.e. for every 50 senior high school students, 1 does not write a research work nor participate as member in a group research.

Further, the findings showed that almost 2% of the population did not defend any individual work nor as a group which translates to the same ratio of 1:50, i.e. for every 50 senior high school students, 1 does not defend before a school panel a research work nor participant as a member of a group in defense. While this



2% non-participation in local research write-ups and defense is small, this provides an impression that there is still a need provide a consensus on local research management guidelines to adhere to the Education For All. To identify a proportion of our student population as a 'learning collateral', i.e. portion that is okay not to learn, should not be condoned at any level of learning in the Philippines. In fact, for Higher Education institutions, Palaoag *et al* (2020) recommended that HEIs should develop their own framework, continuity plan or game plan and creation of consortium among HEIs in the region for continuous learning anchored on the existing tools and resources of the institution, capability of staff and faculty members, and capacity of students.

Furthermore, findings reported that the proportion of senior high school students who did not write individual works is reduced when compared with the number of senior high school who did not participate even as a member of a group defense. The proportion was found as 623:104, or 6:1. This implies that senior high school students shun away from writing but participate in defending the group research studies.

The researchers conclude that there is a convincing evidence to assume that local research management guidelines are in place in various secondary schools in the Philippines, and by extension research management practices are consistent. However, there is a need to clarify on some points that could pose potential threat to nation-building, including mechanisms on how to encourage 2% of the population to participate in research activities as early as senior high school.

PROPOSED POLICY FRAMEWORK

Based on the findings, the researchers have recommended the following mechanisms to initiate a working policy framework on some issues found:

1. Adoption of the START Approach for Beginning Researchers.

It has been a common knowledge that the hardest step to research is to identify the problem, and senior high school students may suffer from loss of idea, which leads to non-submission of write-ups in the first place. Senior High school students are considered beginning researchers because it is only in the SHS Curriculum that research is introduced as a distinct subject. The START Approach, a framework developed by Dr. Jun S. Camara in 2019, one of the researchers, is an acronym for: See - Think - Aim - Refine - Tell Approach to identify practical topics for research.

2. Adoption of the 4-AA Model.

The 4-AA, or the 4-Author Approach/Model is a simplified step to involve at least 3 of the senior high school students as author-researchers, and their research adviser as senior author. This 4-AA model is composed of 4 authors with definite tasks to be performed in a group writing activity - this 4-AA Model aims to reduce the 2% inactive portion of the population since all of the students will be able to perform a task each.

The 4-AA Model is described in the matrix below:

Author	Activity	Assumption	General Task
1 st author	Data Collection	Data are available.	Raw data are collected from all variables.
2 nd author	Data Structure	Data could be presented.	Data are summarized and presented either in tabular or graphical form. 'Simple' data are discussed.
3 rd author	Findings and Implications	Implications are available.	Findings are provided with implications to local contexts (or division, regional, national or international).
4 th author	Senior Edit/Adviser	Full package is required.	The Research Adviser edits the paper.



3. School-based Compendium of Student-led Studies.

For the 4-AA Model, the write-up is an IMRAD Format, and not the generally accepted Thesis Format, which could be presented to the students once they enter college. The schools may organize a School Journal Committee much like the common School Official Publications during Schools Press Conferences that will publish annually or per semester even in print only the IMRAD Format of student-lead studies.

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