

PERCEPTIONS OF MPSPC FACULTY TOWARD RESEARCH¹

by

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KEY WORDS: perception, faculty, research, research method, unstructured observation, sample size, margin of error, statistical analysis, statistical difference, level of significance

ABSTRACT

The study was made generally to determine the perceptions of the MPSPC faculty toward research and in the process find out the factor(s) behind the low involvement of faculty in research. Results of the study revealed that faculty members of the Polytechnic are (more than) knowledgeable enough to be able to do research. However, lack of time remains a constraint hindering most or majority of the faculty from doing research. Some of the faculty members believe the Polytechnic should not engage in research, yet majority of them agree the college should. Most of the faculty members of the MPSPC believe that the research function of the Polytechnic could be realized when both the faculty members do research and the college to put up equipped research laboratory (Table 2). Members of the faculty of MPSPC are generally aware of its fourfold function, albeit there are some who were not even aware. Length of service in MPSPC does not influence this awareness. On the other hand, highest education completed by a faculty member influences their research experience. This may also have a connection why there were more faculty members of higher academic rank and higher education to have done research (Fig. 7).

INTRODUCTION

Research, and development, played and still playing a vital role in the advance of science and technology, and the improvement of the life of peoples or development of the society as a whole. Research seeks to find solutions to our problems and improve our way of living. Research according to Sevilla, et al. (1997) (simply) means searching for a theory, for testing theory, or for solving a problem. For scientific research, this is defined as a systematic, controlled, empirical, and critical investigation of hypothetical propositions about the presumed relations among natural phenomena (Kerlinger, 1973 as cited by Sevilla, et al.; 1997).

Undertaking research though is tedious, time-consuming, and requires financing. Since time immemorial, research had begun. As man is faced with enumerable problems on food, economy, security and or peace and order, and now burgeoning population, he does not stop on researching, much so to satisfy his own curiosity.

¹ A research made from August 2002 to March 2004.

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A very important product of research is technology, either knowledge-based or applied. But technology is generated usually in research institutes (e.g., NASA, IRRI) or universities and colleges with well-developed research programs. The University President's Council of British Columbia (http://www.tupc.bc.ca/publications/ur_bro.pdf) reported that over 30% of the growth in per capita income can be attributed to technological innovation. Most of the technological advances in second half of the 20th century including new biotechnological industries, telecommunications, information technologies, and advanced materials (such as semiconductors, fiber optics, etc.) have their origins in university research. It added that the revolutionary change that modern industrial economies are experiencing may appear to be technological but the real forces of change are ideas, knowledge and innovation. Investment, jobs and incomes are directly associated with the strength and vitality of knowledge-based sectors and institutions.

In another report, Parrish (WPI Pres., 2000) stated that research, fundamental and applied, is an essential element of our mission as a university. Parrish (WPI Pres., 2000) added that through research, faculty and students advance our understanding of the world and put that knowledge to work to serve society. By actively exploring the cutting edges of their disciplines, faculty members stay in touch with the unanswered questions in their fields and with the needs of industry. By bringing the world of discovery—and their own enthusiasm for it—into the classroom and laboratory, they inject a sense of currency and excitement into their teaching. And through publications in major journals, presentations at leading conferences, and articles in major newspapers and magazines, faculty and students advance WPI's reputation around the world.

Research is educative, informative, (and) enlightening, and one cannot sustain oneself as a writer of merit, as a writer whose works will live on when he does not, without research (Chatterji, 2002).

In Philippine State Colleges and Universities, research is one of their mandated functions. This research function can only be put into action when faculties of each State College and University will be willing to undertake research. Being a full-time faculty is not an excuse to not try at least and do research. In WPI alone (Parrish, WPI Pres.; 2000), their research by the numbers includes 220 full-time faculty members and more than 1,100 graduate students. Thus, there is no reason why full-time faculties in Philippine State Colleges and Universities cannot do the same. Besides, Pilipinos believe in a saying that states, "If others can, why can't I?".

Unfortunately, it has been observed by this researcher that faculty members of the Mountain Province State Polytechnic College (MPSPC), especially the College of Engineering and Technology (CET), are quite reluctant to do research or only few of the faculty members are actively involved in research. This observation, however, seem to be the same with the other campuses of the college. Such observation is supported by the poor research outputs of each campus and with having the same individuals or faculties engaged in research.

WPI has made an unusual effort to build bridges between undergraduate and graduate education and between teaching and research (Parrish, WPI Pres.; 2000). The Polytechnic (MPSPC) may adopt a similar strategy if only to realize its mandate on research. Such strategy, however, must be anchored on the root causes of the faculties' "reluctance" in researching and find out why only a few of the faculty are actively involved in research. It was thus, the aim of this study to identify the weaknesses or probable causes of such reluctance by determining the (1) perceptions of the faculty members toward research, and (2) suggest alternatives or recommendations from these to better foster and flourish the Polytechnic's research function.

METHODOLOGY

Problems. The perceptions of faculty were determined based on their responses to a survey questionnaire that will specifically answer the following: (1) What is the level of awareness of the faculty, in general, on the fourfold functions of the Polytechnic in terms of whether; (a) they know the fourfold functions, (b) they have any idea how to put the "research function" of the college into realization, and (c) they think the Polytechnic should (not) engage in research?; (2) What is the level or extent of research experience or exposure of the faculty members?; (3) Does the level of research experience and exposure of faculty members statistically vary in terms of; (a) academic rank, (b) length of service in MPSPC, (c) age, (d) highest education completed, and (e) designations?; and finally (4) What is the reason of highest frequency why some faculty members have neither done, tried, nor wished to research? Is there a statistical difference among their responses?

Methods. A survey questionnaire was made to serve two purposes. These are; to determine the responses of the respondents, in this case the faculty, and to determine their reactions as they answer the questionnaires. Thus, data collection involved unstructured observation by the researcher and distribution of prepared survey questionnaire.

The observation had only one aim; that is to assess the reaction and or behavior of each respondent. Such reaction/behavior gives a clue if the respondent had previous experience in research especially non-experimental or non-scientific researches employing descriptive research method and the like. The survey questionnaire was also prepared not only to determine the respondents' responses but also to allow the researcher a basis for observing their behaviors/reactions as each one answers the survey questionnaire.

The survey questionnaire was written in small font (Times New Roman, 12) but still readable with ease for one not using eyeglasses or eye aides. Questions or surveys were made to fit into one standard short bond paper only (8.5" X 11"). Some questions were written vague and some options made to be checked or crossed in boxes or blank spaces while others were suggestive. These were done to observe how one reacts to: small font as used in research questionnaires, short survey questionnaire as compared to long and time-consuming one, vague or ambiguous questions and indefinite time period, and ease and or freedom of answering.

Respondents of this study were already implied in the title alone, which are the MPSPC faculty members—this include both those in the college of arts and sciences (CAS), college of engineering and technology (CET), and college of forestry (COF).

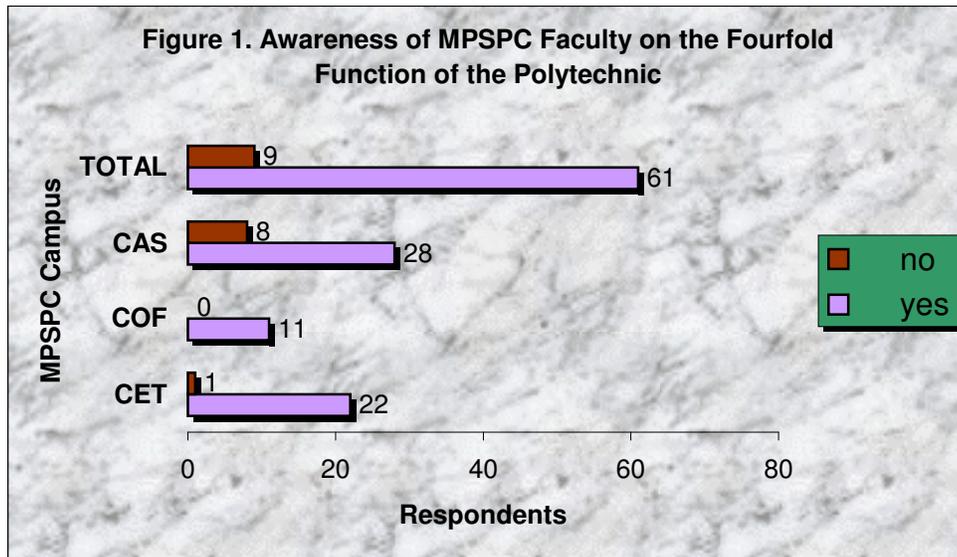
With an estimated faculty of 57 (CAS), 37 (CET), and 16 (COF), the margin of error (e) allotted for sampling size determination for the whole college (N=110) was 6.5% with the aim of surveying at least more than half or 3/4th of the respondent's population for better result. The same consideration was taken into account for each of the campuses (CAS, CET, COF) with a margin of error of 8.5%, 12%, and 17%, respectively. Variation in the margin of error selected for each campus was due to differences in strengths of faculty. Sample size of the respondent was thus calculated following the formula: $n = N / \{1 + Ne^2\}$ (Slovin, 1960 as cited by Sevilla, et al.; 1997); whereby n is the sample size, N is the population size, and e is the margin of error.

After determining the sample size for each campus and the Polytechnic as a whole, the survey questionnaires were put to test simultaneously in the three campuses with the researcher waiting and observing the respondents as they answer the survey form.

Responses were tallied accordingly and statistically analyzed for differences following the chi-square analysis (χ^2). Whenever necessary and applicable, correction and or adjusted formula of the chi-square was used.

RESULTS AND DISCUSSION

Awareness of faculty on the fourfold functions of MPSPC. It was surprising to learn that some faculty members of the Polytechnic are not aware of the very foundation by which every State universities and colleges in the country are mandated to perform (Fig. 1). Albeit, responses revealed that majority or 87% of the faculty knows these functions, which are research, instruction, production, and extension.



It was observed in CAS and CET that some faculty are either not aware of the fourfold function or simply cannot recall them. Although it is hard and difficult to assess through visual observations which of these two reasons is the real cause, this researcher most likely believe it is the former, because some faculty were really asking their fellow including this researcher about the fourfold function.

If the Polytechnic has to realize its vision, mission, goals and objectives, its employees much so the faculty should know these functions for these are embodied in the MVGO of the Polytechnic.

Due to the presence of those who do not know the fourfold function, a chi-square analysis was performed to determine if length of service of faculty members has an effect or relation to this knowledge. The analysis, however, proved no relation between the two (Table 1) even at 5% level of significance. This means, length of service does not influence the knowledge of a faculty about the fourfold function. Thus, a faculty member regardless of length of service may or may not know the fourfold function of the college. Yet, the non significant relationship of the statistical analysis neither justifies nor explain why there are more old members of the faculty who don't know these functions of the college which they ought to know (Table 1).

Table 1. Awareness of MPSPC Faculty on the Fourfold Functions of the Polytechnic against their length of service in the college

Response	<1 - 5 yrs. of serv. in MPSPC	6 - 10 yrs. of serv. in MPSPC	Total	Est'd Prop'n
Yes (O)	13	39	52	0.866666667
(E)	13.86666667	38.13333333		
Obs'd Prop'n	0.8125	0.886363636		
No (O)	3	5	8	
(E)	2.133333333	5.866666667		
Total	16	44	60	

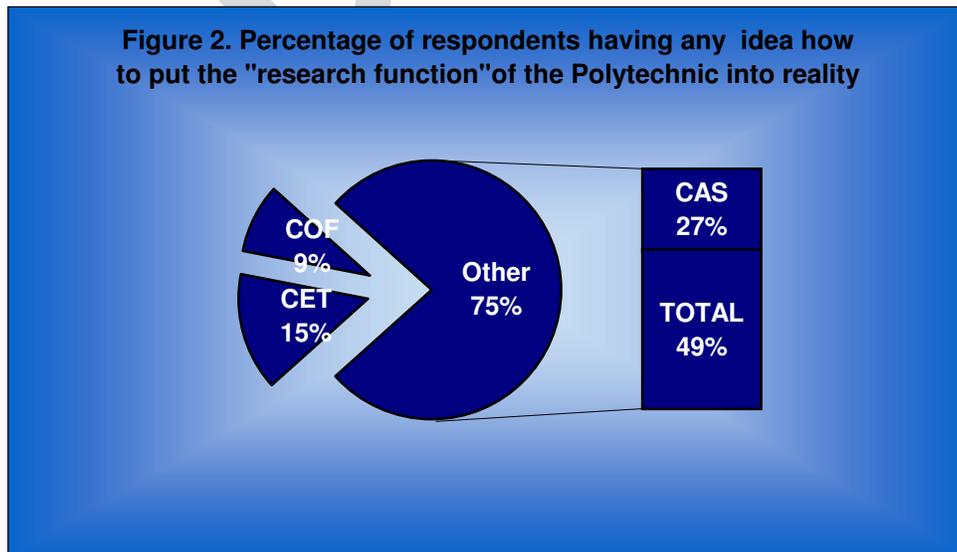
$$\chi^2 = \sum(O_i - E_i)^2 / E_i = 0.553977273$$

$$df = (r-1)(c-1) = 1$$

Using the correction formula for 2 X 2 classification: $\alpha_{0.05} = 3.841$ $\alpha_{0.01} = 6.635$

$$\chi^2 = \{N(AD - BC - N/2)^2\} / (A+B)(C+D)+(A+C)(B+D) = 0.6424825$$

Again the respondents were asked if they have any idea how to put the ‘research function’ of the college into reality; and the result showed that 82% of the faculty has, while 18% of them do not (data not shown). The breakdown of faculty by campus who responded ‘yes’ to the above question is in figure 2.



On the contrary, faculty members who do not have any idea how to realize the research function of the Polytechnic claimed they ‘can’t think at the moment’ they were answering the survey questionnaire handed to them (Table 2). This is justifiable as this is an issue that needs to be pondered. But faculty members who claimed it ‘not my problem/concern’ (Table 2) is unjustifiable, because as member of the faculty of the Polytechnic (or any institute of higher education), they should have realized that the informations or knowledges they acquired and currently teaching for instruction are products of research. Research is the very foundation of education from which new informations are

generated. In like manner, research is the very source of innovations and new technologies for extension purposes and for increasing and improving production.

Nevertheless, majority of the faculty members suggest that the college should put up equipped research laboratory as well as the faculty to conduct researches (Table 2). Other opinions of the faculty on how they could make the research function of the college into reality are varied (Table 2).

Table 2. Summary of responses of MPSPC Faculty when asked the question, "Have you any idea how to put the "research function of the Polytechnic into realization?"

If "yes", how?	CET	COF	CAS	TOTAL
faculty members should do research	2	0	4	6
the Polytechnic should put up equipped research laboratory	5	0	4	9
both of the two above	10	8	23	41
others, pls. Specify your suggestion briefly	2	4	7	13
1.) lack of time 2.) fund for research should not be realigned 3.) researcher' s accessibility/mobility 4.) interested faculty be given time to research 5.) the school should provide some funds 6.) research should be integrated in the undergraduate curriculum 7.) invite speakers for this research 8.) incentives for researchers 9.) provide financial assistance 10.) library is as important as equipment 11.) the college should fund researches 12.) inclined people to do researches should be deloaded and go make researches 13.) college should encourage intereted faculty & students not only those in the graduate school but also in the undergraduate to do some research but I think the admin is not that cooperative				
If "no", why?	CET	COF	CAS	TOTAL
not my problem/concern	2	0	0	2
can' t think at the moment	3	0	3	6
don' t want to think	1	0	0	1
can' t think and don' t want to think	0	0	0	0

Since, it is imperative that as much as possible all faculty of any institute of higher education should engage themselves into research not only for the reasons enumerated above but also to promote the school in the community either locally, nationally, or internationally, and set an example to their students especially in research and science courses, and advises both in the graduate studies and undergraduate studies, a follow-up question was asked whether the respondents think "the Polytechnic should or should not engage in research".

Results of the survey revealed that not all faculty members agree that the college should engage in research undertakings or not all of them disagree that it should not be engaged in research (Figure 3). Those who think the college should not engage in research gave their honest justifications or reasons as stipulated in Table 3. Their responses were copied *in toto* to preserve the ideas each respondent wants to convey. Whether the respondent

understood the question or not is reflected on their answers. As discussed in the methodology, the negative questioning was part of the study for observations not only for their reactions/behaviors as they answer the questionnaire but also to gain insight of their understanding on each question.

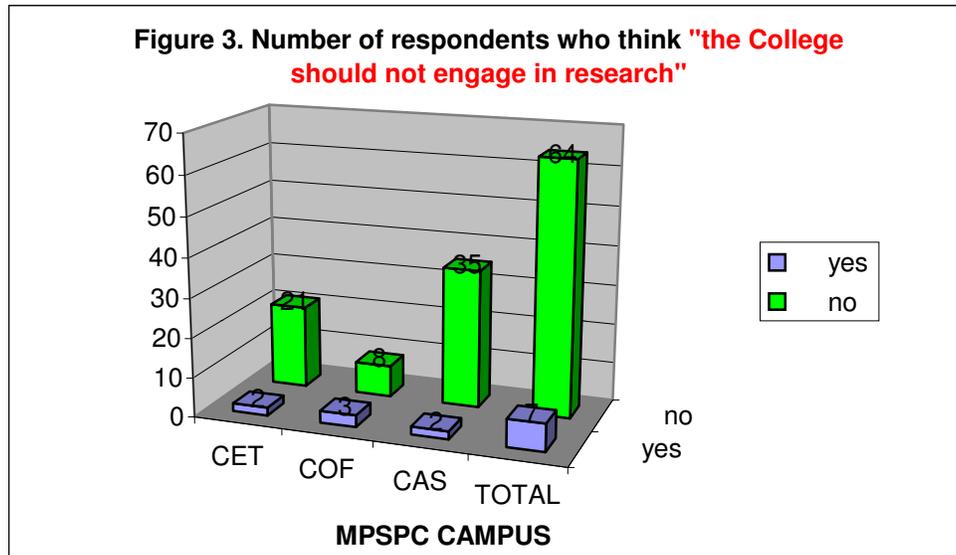


Table 3. Justifications of faculty members who think the college should not engage in research

- 1.) Until now we are not yet updated on how far is the past researches, if it benefited the College or just a waste of money.
- 2.) no budget/funding for research
- 3.) development of knowledge and discovery of new technology for education and extension purposes.
- 4.) to have something to teach
- 5.) to come up with new technologies. adapted for the locality
- 6.) there' s no encouragement from the people concern & if one is encourage to do research there' s no support from the faculty & so with the admin.
- 7.) for improvement of all the person & for our institution

Through unstructured observations, the researcher found that only a few of the faculty noticed the method of questioning followed including the small fonts used to make the survey. Most of the faculty members concerned are in CAS and CET. This observation though is not conclusive in knowing whether one faculty has knowledge in constructing questionnaires or surveys, which are common research tools for researches (usually non-experimental) employing descriptive method.

On the other hand, Table 4 outlines the justifications of faculty members who do not think the college should not engage in research. In other words, they believe that the Polytechnic should engage in research. Responses were copied *in toto* to retain the respondents' ideas.

Table 4. Justifications of faculty members who do not think the College should not engage in research

- 1.) It is one of the function of the college so it should be realized.
- 2.) It should and should also like with other institutions here and abroad that are advance in researches.
- 3.) To justify one of the reasons for its existence.
- 4.) It is one of the functions of the college to be able to help/contribute for the progress of the community.
- 5.) It is for the good of everyone, awareness.
- 6.) The college should engage in research as it' s one of its function as an institution of higher learning.
- 7.) It' s one of the functions, so it should engage in research.
- 8.) To improve institution as a whole.
- 9.) It is obligated to contribute for the advancement of technology & improvement of the standard of living through research.
- 10.) Being an institution of higher learning, it should be the source of new knowledge that is research-based.
- 11.) New knowledge is one product of research.
- 12.) They ought to do research for it' s one of their programs. Research is the primary means of improving ourselves and the whole human race.
- 13.) They should engage in research especially to provide financial support.
- 14.) Research is one of the college main thrust. A way of elevating our college/ polytechnic.
- 15.) As one of its fourfold function the college should conduct researches to attain its mission & objectives. Research also is the foundation of extension services.
- 16.) The college should engage in research so that its philosophy will be attained & its vision will come to reality.
- 17.) It is mandated for the college to undergo research for it is one of its 4 functions. As a learning institution, it should do research for progress and development.
- 18.) Research is one of the four fold function of the college. Thus, the institution can not get ride of research.
- 19.) The college should engage in research to attain its objectives or to sustain its fourfold function.
- 20.) The college should engage in research since it is one of their mandate.
- 21.) The college should engage in research in order to justify its vision and mission. Research enhances the living conditions of society and improve the pool of knowledge.
- 22.) They should since the college is offering natural science.
- 23.) Research should should be a priority of all since it' s an avenue for growth & development of the polytechnic.
- 24.) The college should engage in research to comply with its mission, goals and objectives.
- 25.) Researches justify the existence of the college. Without researches, MPSPC is not worth its name; it' s better to be called a primary school.
- 26.) Where can you see a college who doesn' t have a research function, this will not only benefit the college but the community as well.
- 27.) It is a higher learning so the institution should be updated in all matters especially the technologies that can mold/help students better.

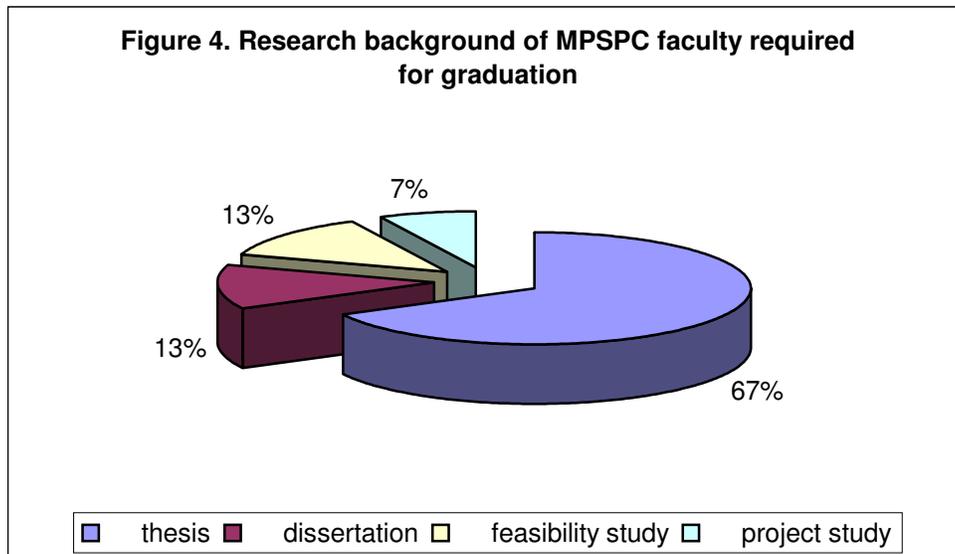
(Table 4. Continued)

<p>28.) Following the mandate of SUCs, the college should engage in research to improve the operations of the school.</p> <p>29.) It might help in the development of the Polytechnic of the faculty & staff and of the student. It will also be helpful to the country and the community.</p> <p>30.) The college should go on research because this is one of the 4 fold functions of the college.</p> <p>31.) They should, but support all needed materials.</p> <p>32.) The college should engage in research but the problem is that most instructors don' t have the time and interest to do researches. Besides, there' s always the problem of funds.</p> <p>33.) Research is good but resources like library materials are nil. We can go to Baguio but we can' t because of full load. Internet does not give in detail needs. It just gives a summary. There are other important things to consider. It is always best to read a book.</p> <p>34.) Research is the only way for improvement.</p> <p>35.) The college should engage in research for additional knowledge for those student taking Masters.</p> <p>36.) For planning and evaluation purpose.</p> <p>37.) One function of the college is to do research.</p> <p>38.) It is a need since it is the trust of the college.</p> <p>39.) Basic function of all institution.</p> <p>40.) Teachers should engage themselves in research for improvement in instruction such as strategies & techniques in teaching & to upgrade themselves with the new trends in technology.</p> <p>41.) It should. But personally I don' t find time.</p> <p>42.) The college is the institute of higher learning, thus, it must encourage faculty & staff to do research for improvement of both the researcher & the college.</p> <p>43.) The result of research is one basis for planning and programming of the college --for dev.</p> <p>44.) An institution will not remain standing w/o doing research, to be used as a basis for their continuos</p> <p>45.) The college should engage in research; bec. research is also a systematic way of educating one' s self & so with the reader & it proves or shows facts & realities.</p> <p>46.) The faculty should for faculty development and of course for upgrading & ranking.</p> <p>47.) Researches can determine weaknesses & strengths of any research study. To have or to come up with possilbe solutions on such researches done.</p>

Their responses give enough reason why the college must engage in research and why each faculty of the same college should undertake research. These responses thus imply that faculty members of the Polytechnic are aware of the importance of research and how it contributes for the betterment of the Polytechnic, community, faculty and staffs, students, and the country. Despite this, there are still faculty members who do not know the fourfold function (Figure 1) and those who think the College should not delve on research (Figure 3). This does not however answer the question, "Why only a few faculty of the Polytechnic are actively involved in research?", which shall be answered below.

Research experience and exposure of faculty members. To determine the extent of research exposure and experience of MPSPC faculty, data on—whether each faculty graduated a degree doing either a thesis, dissertation, feasibility study, or project study; have undergone either a continuing education or re-tooling instruction related to research; and whether a faculty made and have completed researches—were obtained and analyzed, respectively.

Faculty members of the MPSPC have varied research backgrounds or exposure when they graduated (Figure 4). Chi-square analysis revealed a statistical difference at 1% level of significance suggesting that highest education completed of a faculty influences or affects the kind of research exposure or background each faculty has (data not shown). Figure 4 further shows that 67% of the respondents have experienced doing research through thesis writing.



To clarify whether highest education completed truly affects research background or exposure of faculty, a chi-square test was made to responses of faculty members based on their highest education completed. Table 5 indicates that there is a statistical difference at 1% level of significance. Hence, requiring students to conduct short-term studies may consequently harness and improve their skills in research-related works in the future. As Parrish (WPI Pres., 2000) wrote, “Through the University’s required undergraduate projects, particularly the major capstone projects, undergraduates frequently work side-by-side with graduate students and faculty members on research, becoming partners in the process of discovery in a way that undergraduates at most universities rarely do, (which is) just one of many opportunities we offer our students to make a difference before they go out and make their way in the world.”

Table 5. Research background of faculty members required for graduation based on highest education completed

Response	bachelor	master	doctor	Total	Est' d. Prop' n
thesis (O)	8	31	4	43	0.651515152
(E)	13.030303	23.454545	6.5151515		
obs' d prop' n					
dissertation (O)	2	3	5	10	0.151515152
(E)	3.030303	5.4545455	1.5151515		
obs' d prop' n					
feasibility study (O)	8	0	1	9	0.136363636
(E)	2.7272727	4.9090909	1.3636364		
obs' d prop' n					
project study (O)	2	2	0	4	0.060606061
(E)	1.2121212	2.1818182	0.6060606		
obs' d prop' n					
total	20	36	10	66	

$$X^2 = \sum (O_i - E_i)^2 / E_i = 31.143643$$

$$df = (r-1)(c-1) = 6$$

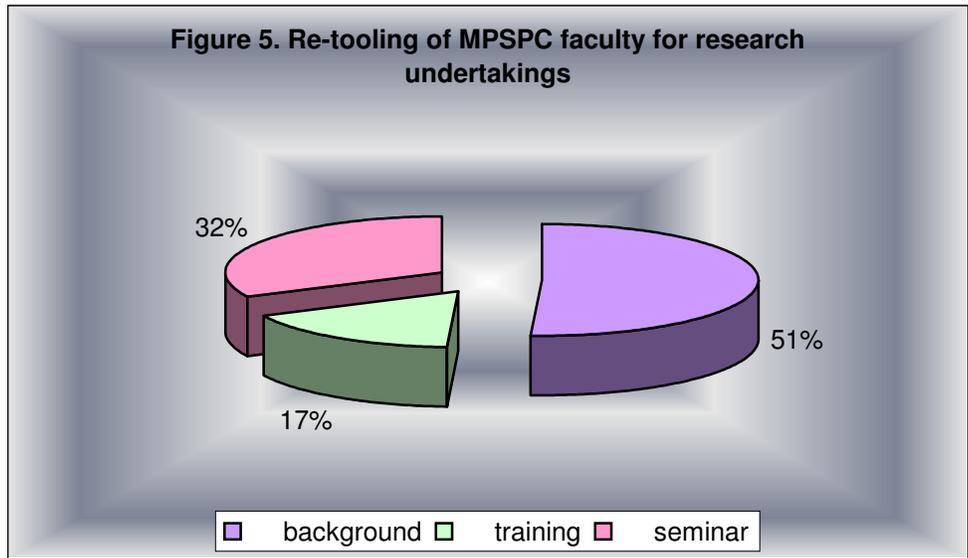
Using the adjusted X2 :

$$\alpha_{0.05} = 12.592 \quad \alpha_{0.01} = 16.812$$

$$X^2 = \sum [(O_i - E_i) - 1/2]^2 / E_i = 31.271507$$

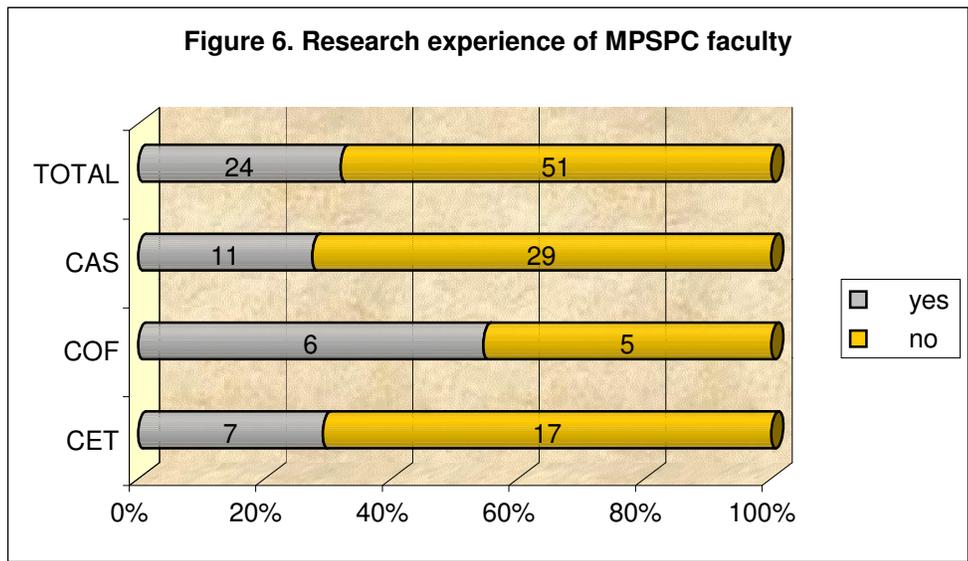
The school is not the only avenue with which one can learn how to make and conduct researches (background). Continuing education through seminars (and workshops), trainings, and others or the like is an alternative. If one, already has a background on research for instance, and still underwent training on the same either to enhance the skill or cope up with innovations, it is then called re-tooling.

As discussed earlier, MPSPC faculty has enough background in doing research (Figure 4 and Figure 5). However, the faculty members also went for seminars and trainings on research (Figure 5). A statistical analysis on the data for Figure 5 was made following the chi-square test. The test revealed that there is a statistical difference at 1% level of significance indicating varied research orientations of the respondents.



With the astounding research background and orientations of MPSPC faculty, there is high expectation they have enough (if not more) research experience like completed researches and on-going researches, finished quality research and output, and published researches either of institutional, local, regional, national, or international circulation.

Figure 6 shows the percentage of faculty members by campus that has done any form of research. Majority of the faculty did not do any form of research, although, more than half of the respondents in COF claimed to have done any form of research (Fig. 6). Chi-square analysis showed a statistical difference on these responses at 1% level of significance. Thus, the number of faculty without any completed researches statistically differs from those who have completed researches.



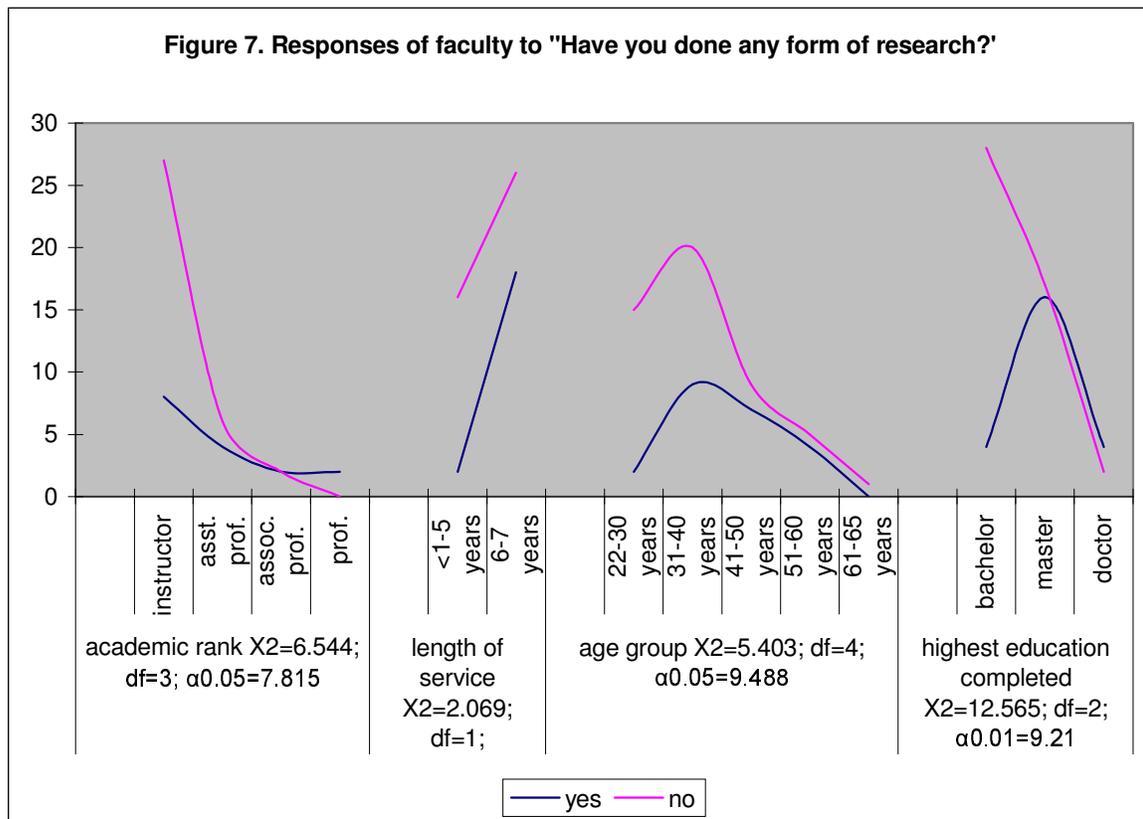
This implies and proves the observation made by this researcher discussed earlier that MPSPC faculty have poor research outputs, albeit, the faculties have astonishing background and orientations on research. This further implies that knowledge on research works may not be the sole culprit to consider for this effect.

Statistical analyses were thus performed on the responses of faculty according to their academic rank, length of service in MPSPC, age group, highest education completed, and designation to determine possible factors affecting the conduct of research in the Polytechnic that continue to plague the realization of its research function.

Chi-square tests indicated that there were no statistical differences at 5% level of significance on the responses according to academic rank, length of service, and age group, while there was a statistical difference at 1% level of significance according to highest education completed (Figure 7).

Generally, there are less faculty members who have done any form of research regardless of academic rank, length of service, age group, and highest education completed (Figure 7). However, the statistical tests indicate that academic rank, length of service, and age group have no influence on research undertakings of the faculty or on whether they have done any form of research, but highest education completed by a faculty influences such (Figure 7). This difference though may only be attributable to the background of the respondent by having a master's thesis as requirement for graduation, which may not be required for some bachelor degrees (data not shown) as shown on the slope in Fig. 7.

These results imply that faculty members who are more inclined to doing researches are those with higher education completed regardless of their academic rank, length of service in the Polytechnic and age group (Figure 7). The evident increase in slope for associate professor and professor on the "yes" response over the "no" response may be explained by the likelihood that faculty members of higher education are usually those who have attained higher academic rank in the college (Fig. 7).



Likewise, the having of designations by some faculty does not influence their having done any form of research (Table 6). There was no statistical difference established at 5% level of significance. Designation thus far is not a hindrance to doing researches by any member of the faculty.

Table 6. Research experience of faculty members with designation

	without designation	with designation	Total	Est' d Prop' n
Yes (O)	24	9	33	0.35483871
(E)	26.61290323	6.387096774		
Obs' d Prop' n	0.32	0.5		
No (O)	51	9	60	
(E)	48.38709677	11.61290323		
Total	75	18	93	

$$X^2 = \sum (O_i - E_i)^2 / E_i = 2.054454545$$

$$\alpha_{0.05} = 3.841$$

$$\alpha_{0.01} = 6.635$$

$$df = (r-1)(c-1) = 1$$

Using the correction formula for 2 X 2 classification:

$$X^2 = \{N(AD - BC - N/2)^2\} / (A+B)(C+D) + (A+C)(B+D) = 0.9819798$$

Each faculty of the Polytechnic has varying completed researches. But, only one has made at least four (Table 7). The statistical difference was established at 1% level of significance using the chi-square test. Table 7 further indicates that although there was considerable number of faculty or at least 65% of the respondents who have done researches (Figure 6), the number of research they may have completed were mostly only one.

Table 7. Number of completed researches of MPSPC faculty

	MPSPC Faculty	Est' d Prop' n
1/1+ (O)	13	0.2
(E)	3.8	
obs' d prop' n		
2 (O)	3	
(E)	3.8	
obs' d prop' n		
3 (O)	2	
(E)	3.8	
obs' d prop' n		
4 (O)	1	
(E)	3.8	
obs' d prop' n		
5 (O)	0	
(E)	3.8	
obs' d prop' n		
Total	19	

$$X^2 = \sum(O_i - E_i)^2 / E_i = 29.15789474$$

$$df = (k-1) = 4$$

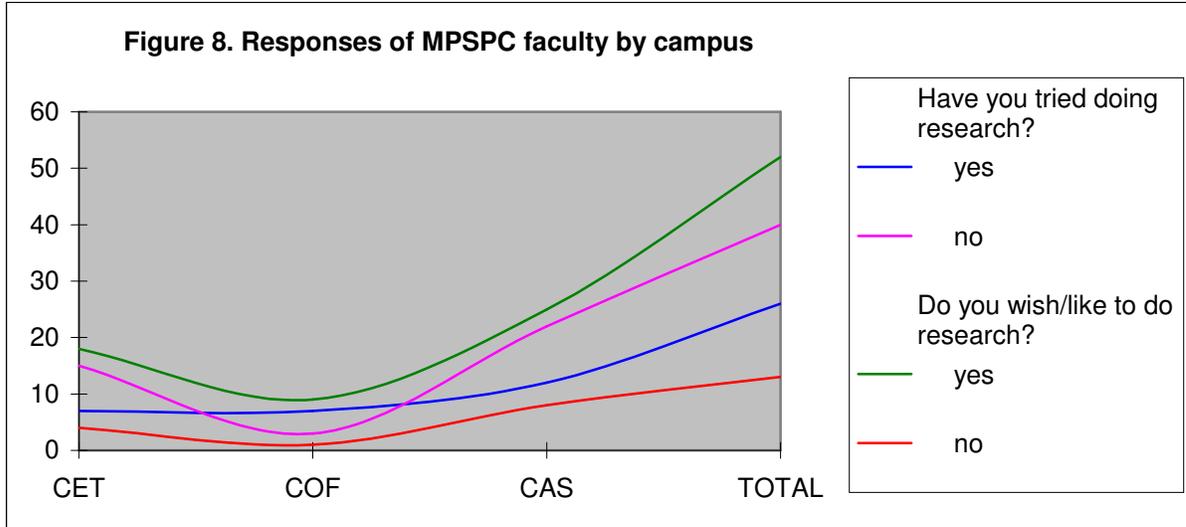
$$\alpha_{0.05} = 9.488$$

$$\text{proportion} = 1/5$$

$$\alpha_{0.01} = 13.277$$

Conclusions may therefore be derived from this outcome such as; there could have been personal reason(s) why most faculty members only afforded to complete one research, the faculty members who did research may have had bad experience(s) that consequently may have disappointed them to do another, or there may have been other reason(s) other than those already mentioned that disappointed them.

Common reasons of faculty members for not doing, trying, or wishing to engage in research. Most faculty members of the Polytechnic have only not done research (Fig. 6 & 7) but also have not tried to do so (Figure 8). Nevertheless, most of them wish to do research (Figure 8). Thus, the question on what is hampering the faculty from doing research.



Apparently, only faculty members from COF have the most number to have tried to research (Figure 8). However, chi-square analysis on the whole population revealed that there is no statistical difference at 5% level of significance (Table 8). In contrast, there is statistical difference established at 1% level of significance on the whole population of respondents who wish to research (Table 9) suggesting that the number of faculty who wish to research outweighs those who do not.

Table 8. Chi-square analysis on the whole population who tried to research

	MPSPC Faculty	Est' d Prop' n
yes (O)	26	0.5
(E)	33	
obs' d prop' n		
no (O)	40	
(E)	33	
obs' d prop' n		
Total	66	

$$X^2 = \sum (O_i - E_i)^2 / E_i = 2.96969697$$

$$\alpha_{0.05} = 3.841$$

$$df = (k-1) = 1$$

$$\alpha_{0.01} = 6.635$$

$$\text{proportion} = 1/2$$

Table 9. Chi-square analysis on the whole population who wish to research

	MSPC Faculty	Est' d Prop' n
yes (O)	52	0.5
(E)	32.5	
obs' d prop' n		
no (O)	13	
(E)	32.5	
obs' d prop' n		
Total	65	

$$X^2 = \sum(O_i - E_i)^2 / E_i = 23.4$$

$$\alpha_{0.05} = 3.841$$

$$df = (k-1) = 1$$

$$\alpha_{0.01} = 6.635$$

$$\text{proportion} = 1/2$$

Statistical analyses though on responses for those who tried to do research according to length of service in MSPC, age group, and designation established no statistical difference at 5% level of significance (data not shown), while a statistical difference is established at 5% level of significance but not at 1% level of significance for both responses according to academic rank and highest education completed (Table 10 & 11, respectively). The latter thus suggests that there were more faculty members according to their academic rank and highest education completed who tried to research (see also Fig. 7).

Table 10. Chi-square analysis on responses for those who tried to research based on academic rank

	Instructor	Asst. Prof.	Assoc. Prof.	Professor	Total	Est' d. Prop.
Yes (O)	11	1	3	2	17	0.361702128
(E)	11.93617021	2.893617021	1.446808511	0.723404255		
Obs' d. Prop.	0.333333333	0.125	0.75	1		
No (O)	22	7	1	0	30	
(E)	21.06382979	5.106382979	2.553191489	1.276595745		
Total	33	8	4	2	47	

$$X^2 = \sum(O_i - E_i)^2 / E_i = 8.198120915$$

$$\alpha_{0.05} = 7.815$$

$$df = (r-1)(c-1) = 3$$

$$\alpha_{0.01} = 11.345$$

Table 11. Chi-square analysis on responses for those who tried to research based on highest education completed

	bachelor	master	doctor	Total	Est' d. Prop' n
Yes (O)	8	12	5	25	0.396825397
(E)	11.11111111	11.9047619	1.984126984		
Obs' d Prop' n	0.285714286	0.4	1		
No (O)	20	18	0	38	
(E)	16.88888889	18.0952381	3.015873016		
Total	28	30	5	63	

$$X^2 = \sum(O_i - E_i)^2 / E_i = 9.045473684$$

$$\alpha_{0.05} = 5.991$$

$$df = (r-1)(c-1) = 2$$

$$\alpha_{0.01} = 9.21$$

On the other hand, statistical analyses on responses for those who wish to research according to academic rank, length of service in MPSPC, and designation established no statistical difference at 5% level of significance (data not shown), while a statistical difference is established at 5% level of significance but not at 1% level of significance for responses according to age group and at 1% level of significance for responses according to highest education completed (Table 12 & 13, respectively). The former suggests that regardless of academic rank, length of service in MPSPC, and designation, the faculty member still wishes to do research. The latter also suggests that age (group) and highest education completed are factors to consider whether one wishes to do research. In other words, both influence the decision making of an individual whether or not he/she wishes to research.

Table 12. Chi-square analysis on responses for those who wish to research according to age group

	22-30	31-40	41-50	51-60	61-65	Total	Est' d Prop' n
	yrs. Old						
Yes (O)	15	21	13	5	0	54	0.805970149
(E)	12.089552	21.761194	12.895522	6.4477612	0.8059701		
Obs' d Prop' n.	1	0.7777778	0.8125	0.625	0		
No (O)	0	6	3	3	1	13	
(E)	2.9104478	5.238806	3.1044776	1.5522388	0.1940299		
Total	15	27	16	8	1	67	

$$X^2 = \sum(O_i - E_i)^2 / E_i = 9.5819385$$

$$\alpha_{0.05} = 9.488$$

$$df = (r-1)(c-1) = 4$$

$$\alpha_{0.01} = 13.277$$

Table 13. Chi-square analysis on responses for those who wish to research according to highest education completed

	bachelor	master	doctor	Total	Est' d. Prop' n
Yes (O)	25	20	5	50	0.806451613
(E)	20.96774194	25	4.032258065		
Obs' d Prop' n.	0.961538462	0.64516129	1		
No (O)	1	11	0	12	
(E)	5.032258065	6	0.967741935		
Total	26	31	5	62	

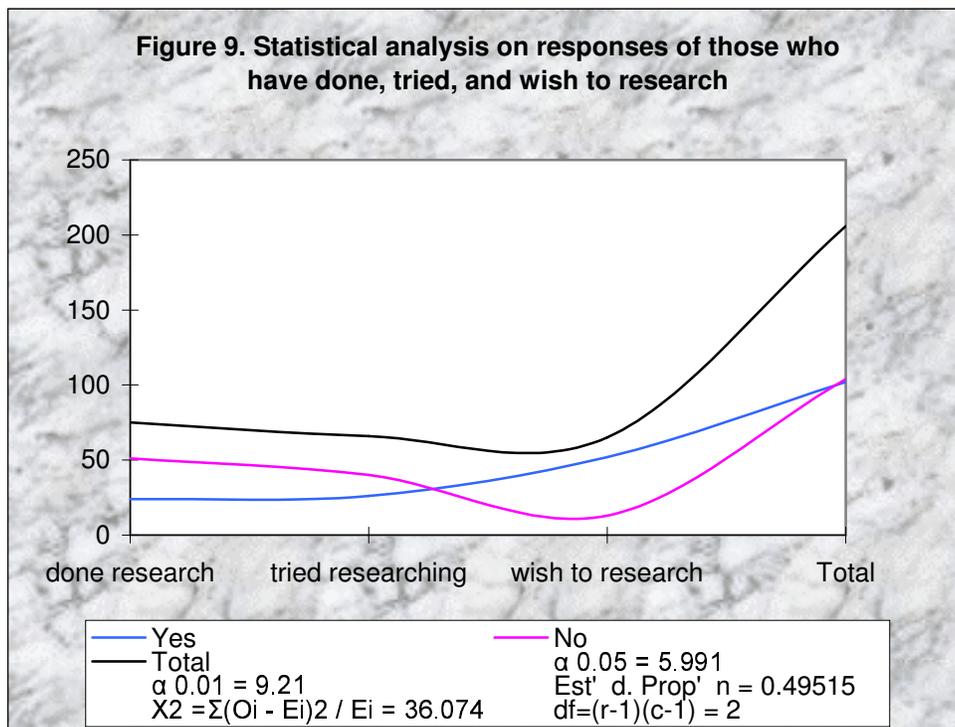
$$X^2 = \sum(O_i - E_i)^2 / E_i = 10.37307692$$

$$\alpha_{0.05} = 5.991$$

$$df = (r-1)(c-1) = 2$$

$$\alpha_{0.01} = 9.21$$

To determine if there is variation or difference on the number of respondents who have done, tried, and wish to research (see Figures 6, 7, & 8, Tables 8 & 9), chi-square test had been performed (Figure 9). There is statistical difference observed at 1% level of significance, which suggests that MPSPC faculty members who have done, tried, and wish to research varies considerably. The number of faculty members who wish to research was also significantly higher than those who do not wish to and than both those who have done and tried to research (Figure 9).



Common reasons of MPSPC faculty for not doing, trying, and wishing to conduct researches is ‘lack of time’ followed by ‘no interest’ and ‘no knowledge’ (Table 14). The reason, ‘no knowledge’, however is a minor consideration as most of the MPS PC faculty members are (more than) knowledgeable enough on research works (Fig. 4 & 5). Hence, the first two common reasons are the more acceptable and probable causes for the reluctance or hesitation of faculty members to research.

Table 14. Chi-square analysis on the reasons of respondents for not doing, trying, and wishing to research

	MPSPC Faculty	Est' d Prop' n
Lack of time (O)	88	0.2
(E)	34.4	
obs' d prop' n		
no knowledge (O)	20	
(E)	34.4	
obs' d prop' n		
no interest (O)	30	
(E)	34.4	
obs' d prop' n		
no budget (O)	19	
(E)	34.4	
obs' d prop' n		
lack of interest (O)	15	
(E)	34.4	
obs' d prop' n		
Total	172	

$$\chi^2 = \sum (O_i - E_i)^2 / E_i = 107.9418605$$

$$\alpha_{0.05} = 9.488$$

$$df = (k-1) = 4$$

$$\alpha_{0.01} = 13.277$$

$$\text{proportion} = 1/5$$

Table 14 also indicates that there is statistical difference at 1% level of significance suggesting that differences on the frequency of reasons of respondents really exist and not by chance or error. Individual analyses with the chi-square on each of the frequency of reasons for not doing, trying, and wishing to research also established a statistical difference at 1% level of significance (data not shown).

Since majority of the faculty agree that the college should engage in research (Fig. 3) and acknowledge the role research plays for the Polytechnic and its employees, and the community or people as a whole, each full-time faculty and the administration should also realize that the MPSPC faculty members being the only capable human resource of the Polytechnic in research-related works must work together to the realization of the research function of the college (Table 2).

CONCLUSION

- 1.) Majority of the MPSPC faculty are aware of the fourfold function of the Polytechnic (Fig. 1) and have ideas how its “research function” could be realized (Fig. 2, Table 2). Most of the faculty members agree that the college should engage in research—being an institution of higher learning (Fig. 3, Table 4).
- 2.) Knowledge on research of the faculty members is astonishing, so most of the MPSPC faculties are very capable of researching (Figures 4, 5, 6, & 7, Tables 5, 6, & 7).

- 3.) The level of research experience and or exposure of the faculty do not differ statistically based on academic rank, length of service in MPSPC, age, and designation; however, it is statistically different based on highest education completed (Fig. 7, Table 6).
- 4.) The commonest reason (reason of highest frequency) of MPSPC faculty for not doing, trying, and even wishing to research is ‘lack of time’ (Table 14). Their responses or frequency of reasons statistically differ at 1% level of significance (Table 14).

RECOMMENDATIONS

- 1.) Every full-time faculty member of the Polytechnic should get involved in research towards the realization of the fourfold function of the college, because research is intertwined with instruction, extension, and production.
- 2.) The Polytechnic administration together with faculty members must come up with a working solution to make everyone get involved in research. This will consequently patch up the problem on ‘lack of time’ on the part of the faculty.
- 3.) Completed researches must be published (data were not shown and discussed).

REFERENCES

- CHATTERJI, S. A. 2002. The importance of research. Writer’s Resource Center. Accessed on 2002, August: <http://www.poewar.com/articles/research.htm>
- JARRETT, J. and A. KRAFT. 1989. Statistical analysis for decision making. Allyn and Bacon, a division of Simon & Schuster; 160 Gould Street, Needham Heights, Massachusetts 02194.
- PARRISH, E. A. (WPI President) 2000. The strategic importance of research at WPI: Research and Discovery. Worcester Polytechnic Institute. Last modified: 2000, November; <http://www.wpi.edu/Academics/Research/importance.html>
- SEVILLA, C. G.; J. A. OCHAVE; T. G. PUNSALAN, B. P. REGALA; and G. G. URIARTE. 1997. Research methods. Rex Printing Co., Inc.; Q. C., Phil. Revised edition. 332p.
- THE UNIVERSITY PRESIDENT’S COUNCIL OF BRITISH COLUMBIA. (n.d.). Accessed on 2002, August: http://www.tupc.bc.ca/publications/ur_bro.pdf. Suite 400-800 Douglas Street Victoria, BC V8W 2B7; www.tupc.bc.ca