INTELLIGENCE STATUS OF STUDENTS BEFORE AND AFTER EXPOSURE TO COLLEGIATE LEARNING EXPERIENCE

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ABSRACT – The study aim to determine the intelligence status of Pangasinan State University, Asingan Campus, students using the pre-test and post-test results from a standardized Filipino based intelligence test. Specifically this study would like to determine the profile of students, their pre-test and post-test performance in terms of crystallized, fluid and general intelligence, and as well explore if there is a significant difference on the three identified intelligences and further look into its relationship to the students profile and GPA performance.In general, the performance manifested by the students depicts that most of the students has improved crystallized intelligence (cis) during the post-testing of the intelligence test taken and has fallen under the high average to very high description during the post-testing in contrast to the pre-test performance of the students in terms of their fluid intelligence (fis). Also, majority of the post- test takers were classified under the high average to very high general intelligence (gis) providing an increased in the gis as compared to the student pre-test performance falling from the very low to average gis.

KEYWORDS: intelligence status of students before and after exposure to Collegiate learning experience

I.   INTRODUCTION

Defined by various personalities in psychological testing, intelligence is viewed as a mental capability of an individual to reason, to plan, to solve problem, to think abstractly, to comprehend complex ideas, to learn quickly and to learn from experience, a thinking skill and the ability to adapt to and learn from life's everyday experiences. [7]

In the context of the academe, intelligence can be considered as one of the variable that may affect studen performance and success in school. At one hand, intelligence is dependent on the inherent ability provided by the imprint of an individual's parent, thus, it is considered to be fixed. On the other hand, the nurturing provided by environment is on a large extent plays an important role as well in the attainment of a person's full potential. Vis-à-vis, if the environment may affect individual's capacity it can be assumed that intelligence may be enhanced across time and experience.

Essentially, a standardized school achievement test is only a refinement of the examination a teacher gives at the end of the course. Such tests are designed to do accurately and on a large scale what every teacher does routinely to find out how much of the material of a course each student has mastered. Our system of universal public education, secondary as well as primary, brings teachers and administrators into contact with students drawn from an extremely wide range of home and community backgrounds. Yet because our schools are locally controlled, we have no standard curriculum for the country as a whole, and schools in some areas are far more effective than that elsewhere. Because people change residence frequently, children are constantly being shifted from one school system to another. Plainly, some standard way to find out how much an individual knows about a given school subject is virtually a necessity of which we are to make our educational system work. Educational achievement test, therefore meet a real social need.[3]

Premised on the above statement, it has been an awareness that students enrolled at Pangasinan State University, Asingan Campus are actually a product of the different secondary schools in Pangasinan, and some nearby provinces, most of which coming from the different National High Schools. As such, the Campus Guidance Office

intends to lead the students to be in line with the University's Vision, Mission, Goals, and Objectives. To do so, it is then part of the Guidance Services to employ Psychological Testing that can help the office obtain clearer picture of the student' potentialities which is eventually brought into an overview presentation to the campus administration.

With this study, a comprehensible impression of what really comprises the totality of Pangasinan State University's students with respect to their intelligence can be drawn which could be made as basis in deriving programs that is far more suitable to students of the University who are presently connected. Along with that, the intelligence test given could bestow an overview of the capability of the University to assist students attain full potentiality. Thus, with such matter that discovery would facilitate program evaluation and enhancement, and also set standards and expectancies towards students into a more realistic manner.

More so, it has been considered that whatever obtained result on the intelligence test undergone by the students during their earlier involvement at the university cannot be attributed to be and influence of the institution. Rather, as discussed on the previous premises, intelligence may be indicated through either an influence of the hereditary component of the individual, the intelligence contributed by the significant others, or may on the other hand a result of the environment that the student is involved at: proper nutrition, proper care of the people surrounding the person, support of these people as well, and the quality of education provided for the individual, and the likes.

As such, the study may be of help to discover how Pangasinan State University had contributed to the development of the students enrolled, in terms of the specified components: Crystallized, Fluid, and General Intelligence, that is.

In the research to be conducted, the researchers intended to assess the intelligence of the students through the conduct of a pre-test and post-test of a Filipino based test to further find out how environment and heredity impacted individual intelligence of PSU Asingan Campus students.

II.   OBJECTIVES OF THE STUDY

The main concern of this study is to determine the intelligence intelligencestatus of students before and after exposure to collegiate learning experience using the pre-test and post-test performance results from a standardized Filipino based intelligence test. Specifically this study would like to determine the profile of students, their pre-test and post-test performance in terms of crystallized, fluid and general intelligence, and as well explore if there is a significant difference on the three identified intelligences and further look into its relationship to the students profile.

III.   MATERIALS AND METHODS

To be able to provide a credible answer with a high degree of confidence to the posted endeavour, a descriptive research design is employed to yield the strongest possible evidence that will support or contest knowledge obtained herein.

As a tool in finding out the Pangasinan State University, Asingan Campus students' level of intelligence, the Filipino Intelligence Test (FIT) was used to purposely determine students' crystallized, fluid and general intelligence in four subtests, Vocabulary, Analogy, Numerical, and Abstract Reasoning, which measures aspects of human intelligence. Obtained information may be considered helpful in identifying those individual who are markedly deficient or superior in academic competence. [6]

To add, graduating students of the academic year 2016-2017 were considered to be the subject of the study who had undergone FIT post-testing and the result of their taken FIT way back first year were considered as the pre-test data.

IV.   RESULTS AND DISCUSSION

The following tables depict the result for the frequency and percentage distribution of the Profile and Pre-test and Post-test Intelligence Performance of Pangasinan State University, Asingan Campus 2018. Vis-à-vis, following findings are made:

Table 1.Sex

Course	No. of Respondents	Sex Male		Female	
	f	f	pr	f	pr
BSE	21	3	14.29	18	**85.71**
BEE	14	2	14.29	12	**85.71**
BSBA	12	4	33.33	8	**66.67**
BSIT	20	11	**55.00**	9	45.00
	67	20	29.85	47	**70.15**

47 (pr=70.15) of the students were female and is taking up courses under the BSE, BEE, and BSBA. This implies that majority of the respondents were interested in courses that are social, emotional, arts in nature, and prefers clerical responsibilities and task that requires costumer relation skills. In contrast, male students prefer courses involving technical skills and dexterity as deduced by BSIT choice of the 20 (pr=29.85) male students.

Table 2.Nature of School

Course	School Upr		Upb		Rpr		Rpb	
	f	pr	f	pr	f	pr	f	pr
BSE	0	0	1	4.76	2	9.52	18	**85.71**
BEE	0	0	1	7.14	2	14.29	11	**78.57**
BSBA	0	0	1	8.33	0	0	11	**91.67**
BSIT	0	0	2	10.00	0	0	18	**90.00**
	0	0	5	7.46	4	5.97	58	**86.57**

Legend: Upr - Urban Private   Upb - Urban Public   Rpr - Rural Private Rpb - Rural Public

As deduced, 58 students (pr=86.57) matriculated from national high schools that are usually under the rural public schools.

Table 3. Intelligence Test Pre-Test and Post-Test Performance of Students

SUBTEST	f	pr	ND
PRETEST			
CIS	12	17.91	LA
FIS	22	32.84	A
GIS	25	37.31	A
POSTTEST			
CIS	19	28.36	A
FIS	19	29.85	A
GIS	22	34.33	HA

Legend: VL – Very Low   L –Low BA – Below Average LA – Low Average

A – Average   HA – High Average AA – Above Average

H – High   VH – Very High   ND – Normative Description

CI – Crystallized Intelligence FIS – Fluid Intelligence   GIS – General Intelligence

Table 4. (Cont.)

	Lower Range	AVE	Upper Range
	VL to LA		HA to VH
SUBTEST	pr	pr	pr
CIS Pretest	**64**	13	26
CIS Posttest	27	28	**45**
FIS Pretest	**36**	33	32
FIS Posttest	15	30	**55**
GIS Pretest	**37**	**37**	25
GIS Posttest	19	16	**64**

Legend: VL – Very Low LA – Low Average   A – Average HA – High Average

H – High   VH – Very High CI – Crystallized Intelligence FIS – Fluid Intelligence

GIS – General Intelligence

The verbal reasoning ability, comprising the Vocabulary and Analogy Subtest, combined by the individual's numerical ability is the composition of student's Crystallized Intelligence. To such, this intelligence is then a learned ability to find relationships, make judgment, and use strategies or "aids" to achieve solutions to problems. More so, it also represents the acquisition of specific skills and information through familiarity with the cultures language, acquired store of knowledge and training method as taught in school. Thus, education and prior experiences in the "collective intelligence of a culture" place an important role for the acquisition of such intelligence as such intelligence only connotes those which one has learned and is reflected in a cognitive performance.[3]

On the pre-test performance depicted for the students' crystallized intelligence (CIS) it is gleaned that cumulatively, the students fall under the very low to low average intelligence where most of them are classified under the low average description (pr=17.91) thus implying that the students performance are 23 to 40 percent lower or equal to the referenced sample of the intelligence test taken.

On the other hand, there has been an increase of the students CIS during the post-test administration where majority of the takers were already classified under the higher average to very high intelligence, most were under the average description (pr=28.36). Furthermore, the combined percentages of the very low to low average description pre-test performance (pr=64) has decreased to 37 percent and had even been classified from the high average to very high description   (pr=45).

Moreover, it is can be seen that the students non-verbal reasoning, as depicted on the fluid intelligence (FIS) pre-test result, was described to be under the average classification (PR=32.84). Gaining such, it is implied that the students ability to perceive relationship in abstract figure pattern is fairly sufficient and had performed 40 percent lesser or equal up to 60 percent higher or equal to the performance of the referenced sample.

Compared to the pre-test outcome, the post-test result of the takers had still fallen into the average category (PR=29.85), hence it is noted that as weighed against the students pre-test performance, there has been a higher

percentage of students under the high average to very high description (PR=55) in contrast to the pre-test performance of the students (PR=36) who mostly were under the very low to low average description.

To add, fluid intelligence is a measurable outcome of the biological factors on intellectual development which meant that it is a product of heredity and may pertain to individual's innate ability. The measurement of the Fluid Intelligence merely demands the used of individual common sense which is applicable to life situations thus prior learning does not play a role. [3]

Fluid intelligence can be improved through physical activities, arts, etc., so it maybe that if one focus more on improving the crystallized intelligence, that is giving much attention to academic activities, without any engagement of physical or artistic activity, a person may be sacrificing the enhancement of the individual's fluid intelligence. With the result, it appeared may be that the greater of consistent result of the students high intelligence in their FIS is because the environments provided them with these activities helpful in the increase of the FIS.[2]

From the combined CIS and FIS outcome of the students, majority of the test takers were then classified under the high average to very high general intelligence (GIS) post-test performance (pr=64) which implies that the students had performed 60.1 to 99+ percent higher or equal to the reference sample. The result provided a 27 percent increased in the GIS as compared to the student pre-test performance (pr=37) falling from the very low to average GIS.

To note, intelligence test as well as any other kind of test, should be used not to label individuals but to help in understanding them through assessing their strengths and weaknesses to bring them to their maximum functioning level. To exemplify, if a reading test indicates that a child is retarded in reading, we do not label the child as a non-reader and stop; nor do we administer a nonverbal test to conceal the handicap. Instead, we concentrate on teaching the child to read. [1]

Table 5. Difference on the Pre-Test and Post-Test Performance

Dependent Variable		Mean	Mean Difference	F	Sig.
cis	Pre	33.9701	-18.00	13.795	.000
	Post	51.9701			
fis	Pre	50.4627	-13.45	12.802	.000
	Post	63.9104			
gis	Pre	46.4478	-16.46	16.337	.000
	Post	62.9104			

Presented on the above table pertaining to the difference between the pre-test and post-test performance of student who took the Filipino based intelligence test, it can be seen that indeed, there is a significant difference (Sig.=.000) to all of the dependent variables: cis (Mean Difference=-18.00), fis (Mean Difference=-13.45), gis (Mean Difference=-16.46). Thus, the students in all intelligence type had increased significantly in the post-test taken during their fourth year.

An individual intelligence, both of the cis and fis, can possibly encounter changes as one grows older. Bluntly, the former may increased throughout the stages of adulthood and halts during old age. The fis on the other hand, peaks its increased during the early stage of adulthood and declines during the middle stage of adulthood until the old age. As such, it can be inferred that as an individual grows older, the person's intelligence also increases and will eventually reach plateau and stops. The premise depends of course on the nature of an individual exposure to, interest in, and involvement with different personal activities [4]

Table 6. Relationship in the Pre-test and Post-test result to Student Profile

		Pretest			Posttest		
		Sex	Course	School	Sex	Course	School

CIS	χ^2 value	0.217	0.557	**7.764 ***	0.262	0.003	0.925
	Sig. value	0.642	0.456	**0.005**	0.609	0.958	0.336
	Interpretation	NS	NS	S	NS	NS	NS
FIS	χ^2 value	0.006	0.139	2.044	3.558	1.419	0.082
	Sig. value	0.936	0.710	0.153	0.059	0.234	0.774
	Interpretation	NS	NS	NS	NS	NS	NS
GIS	χ^2 value	0.790	0.464	3.243	2.043	0.777	0.130
	Sig. value	0.374	0.496	0.072	0.153	0.378	0.719
	Interpretation	NS	NS	NS	NS	NS	NS

**significant at 0.05 level NS = Not significant, S = significant

Table 7. (Cont.)

SchoolRec * cispre (Binned) Crosstabulation

Count

		cis		
		50 and below	50 above	Total
School	Public	48	14	62
	Private	1	4	5
Total		49	18	67

From the result presented regarding the relationship of the pre-test and post-test performance of students and their profile as deduced on Table 5, it is indicated that among the variables considered, the pre-test performance indicated a significant relationship with the school where the students graduated from (Sig.=.005). More so, students from private schools obtained greater number of students falling under 50 above percentile range intelligence in terms of the crystallized intelligence as compared to students connected with the public schools.

Our capacity to identify and apply past obtained solutions to latest circumstances, crystallized intelligence by such, is also brought upon by our extreme response to education and training. Extensive practice as revealed by numerous studies after studies affects the schematic forms of reasoning which is essential in the individual problem solving ability appropriate to a specific domain. [5]

"Fluid intelligence appears to be one determinant of how efficiently information can be acquired during the schema-acquisition period. (This may partially account for the correlation between measures of fluid and crystallized intelligence.) However, knowledge builds on knowledge, so soon the expert has an advantage over the novice in learning how to learn within a particular field. Whether or not there is a generalized ability to learn to learn, regardless of the field being studied, is an open question. If there is, this ability is probably quite closely related to fluid intelligence."

V.   CONCLUSION AND RECOMMENDATION

Based on the findings of the administered Filipino Intelligence Test, it can be concluded that majority of the students were female, taking up courses under the BSE, BEE, and BSBA, and had finished high school under the rural public schools.

Most of the students are classified under the low average description in terms of their pre-test cis performance which on the other hand had improved as appeared on their post-test performance where most were already under the average description and had even been classified from the high average to very high description. More so,

students fluid intelligence pre-test and post-test result, was described to be under the average classification, hence there has been a higher percentage of students post-test performance under the high average to very high description in contrast to the pre-test performance of the students who mostly were under the very low to low average description. Also, majority of the test takers were then classified under the high average to very high general intelligence post-test performance The result provided a 27 percent increased in the GIS as compared to the student pre-test performance falling from the very low to average GIS.

Furthermore, the difference between the pre-test and post-test performance of student who took the Filipino based intelligence test appeared to have is a significant difference to all of the dependent variables. Thus, the students in all intelligence type had increased significantly in the post-test taken during their fourth year. And the relationship of the pre-test and post-test performance of students and their profile as deduced on indicated that among the variables considered, the pre-test performance indicated a significant relationship with the school where the students graduated from where students from private schools obtained greater number of students falling under 50 above percentile range intelligence in terms of the crystallized intelligence as compared to students connected with the public schools.

In view of the conclusions obtained from the study, certain intervention may be employed to further assist students in maximizing their potentials. An extensive career guidance program in collaboration with the gender and development office of the school may be conducted to further assist students in their career options to as well provide options for each gender to explore courses excluding their gender as basis in their selection. Peer facilitator circle can be organized where members are scouted through their different personality, skills, and talents where group may inculcate different activities that can enhance and or maximized student potentials. As well, School Organizations like Math, English, Science Club, etc. can be established to further extend help and acquaintance to the students in need of such organization's services. Weekly scheduled tutorials from adopted national high schools can be employed by the Teacher Education Department involving its instructors and practice teachers to help high school and or elementary students maximize their potentials further becoming a rich bases of finding out the impact of the activity to student intelligence. In addition, follow up service of the guidance office may be strengthened inculcating the conduct of a study habit lectures, parent consultation and orientation to assist students who commits significant absences, and failing marks to at least support the students in the adjustments of the endeavours they are facing. Retention policy of the university should also be implemented consistently to further secure that the students are able to manage the requirements of their subjects effectively and efficiently: 10% of failed subject would mean 3 units deloading of subject to sight as an example. Moreso, methods and facilities of both public and private school, as well as the student teacher ratio, may be compared and looked into for adaptation of what affects students maximization of intelligence.

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