SOUTHEAST ASIAN JOURNAL OF SCIENCE AND TECHNOLOGY

Volume 1, Issue 1, 2016
P-ISSN: 2672-2984
E-ISSN: 2672-2992
www.sajst.org

Social Attributes of Students Exposed Under Practical Teaching Approach

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Abstract - *The study focused on Practical Intelligence (PI) Teaching Approach as an intervention in Botany 1. Specifically, it sought to determine the characteristics of students exposed to the approach as compared to those not exposed in terms of their social attributes.*

Two sections of second year Botany students in a university located in Northern Philippines were taught by the researcher using the PI Teaching Approach and the conventional approach, respectively for eight weeks during the second quarter of School Year 2015-2016.

Findings reveal that the PI Teaching Approach was more engaged in activities, recited fairly better than the control group, more enthusiastic in learning and exploring biology concepts as evidenced by their improved performance in recitation and laboratory work. Their interest to relate learned concepts to everyday real-world experiences was apparent than in the control group although it did not guarantee a higher achievement rate. Their fluency in the use of botany terms was also notable as they tried to create poems and songs about selected topics. The researcher then suggests that back-up activities should be prepared by the teacher in order to utilize and channel the high level of energy that they students had since they tend to quickly accomplish given task (e.g. laboratory work). Varied types of home work should also be given to the students for them to be more challenged.

Keywords: Practical Intelligence Teaching Approach, Characteristic of Students

INTRODUCTION

It could be seen that various instructional approaches and innovations are being developed yearly. However, most of these educational innovations have turned out to be little more than fads (Lochhead and Clement, 1978). Moreover, teachers are often skeptical if these programs will produce superior knowledge or ability. Snow and Lohman (1984) suggested that instructional approaches such as lecture, discussion and role playing be incorporated into the lesson to make instruction effective because not all instructional approaches benefit students in the same way. An important question to ask then is "How does the instructional approach address the problem of improving the thinking skills and strategies of students?"

Each person is unique and they tend to differ in their IQ-like abilities. Conventional views of intelligence favor individuals who are strong in memory and analytical abilities (Carroll, 1998). However, Sternberg and Grigorenko (2000) believe that each person has to find his/her path of learning; that there is no path that works for everyone and that there is no single road to ***intelligence***--- the ability to solve problems or to fashion products that are valued in one or more cultured settings (Gardner, 2006); or the ability to adapt to, shape and select environments in a way that fulfills one's learning goals (Sternberg, 1998).

Individuals who are labeled unintelligent by means of conventional exams may in fact have the talents to succeed in life while those labeled as intelligent may be less endowed with such talents (Sternberg, 1997). This was found in the results of studies done in diverse settings to assess

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intelligence as an adaptation to the environment. The researches done by Carraher, Carraher & Schliemann (1985), Ceci and Roazzi (1994), and Nunez (1994) focused on Brazilian street children who were under great contextual pressure to form a successful street business. The researchers found out that the children who were able to do mathematics needed to run their street business were often minimally able or unable to do school mathematics. The more abstract and removed from real-world contexts the problems were in presentation, the worst the children did on the problems. The results suggest that differences in context can have a powerful effect on performance.

Practical intelligence represents one of the several concepts that have received increasing attention in recent years as an alternative view of intelligence. Compared to analytic and creative intelligence, the concept of practical intelligence is relatively new (Malgozata and Berzinia, 2000). This roots of this concept can be traced to several experiments that include practical intelligence aspects in the intelligence model, *e.g.,*Vernon's practical-mechanical-spatial-physical factor. However, Sternberg and his co researchers have been practically the only ones researching practical intelligence for more than 15 years (Sternberg & Wagner, 1988; Sternberg, Okagaki & Jackson, 1990; Grigorenko, Gil, Jarvin & Sternberg, 2001).

Persaud (2001) in her study said that to succeed in life, people need both emotional as well as intellectual skills. However, not all real-life difficulties that people face are solvable with just these skills. The crucial problems with academic and emotional intelligence scores are that they are both poor predictors of success in real life. Professor Sternberg (1985) group at Yale began from a very different position to traditional researches into intelligence. Instead of asking what intelligence was and investigating whether it predicted success in life, he asked what distinguishes people who were thriving. Instead of measuring this form of intelligence with mathematical or verbal tests, practical intelligence is scored by answers to real-life dilemmas such as: "If you were travelling by car and got stranded on a motorway during a blizzard, what would you do?" Intelligence is primarily an issue not of amount but balance of knowing when and how to use analytic, creative and practical abilities (Das, Kar and Parrila, 1996).

The aim of this study therefore is to determine the effectiveness of Practical Intelligence approach in improving social competence and problem-solving ability of biology students in the topic genetics.

Statement of the Problem

The study seeks to develop and assess practical intelligence among high school biology students on topics such as genetics and taxonomy.

Specifically, the study seeks to answer the following question:

1. What are the characteristics of students exposed to practical intelligence teaching approach and how does this differ with those not exposed?

METHODOLOGY

In this section, the research design, the instruments to be used, the description of the research participants and the data collection and analysis procedures are presented.

Research Design:

This is a quasi - experimental study that utilizes the non-equivalent control group. The study is quasi-experimental because it was not possible for the researcher to assign the samples randomly to any group since the groups were already formed and intact even before the treatment (X). The only randomization possible was to assign the intact groups to be anyone of the following groups: PI approach and conventional teaching approach by means of a coin toss. The study utilized a non-equivalent group design because only one group is given the treatment (X) while the other is not (~X).

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The Sample

The research participants consist of eighty-four (110) second year college students students from two intact classes in Pangasinan State University, a state run university located in the northern part of the Philippines. The two classes were randomly assigned treatment by means of a coin toss. The two classes are considered pilot sections and most of the students are of high ability. The researcher is the regular science teacher assigned to these two sections for the School Year 2015-2016, first semester.

The researcher gathered data on the students' rank order in the family, performance of household chores, responsibility in class or club and engagement in sports through the Students Personal Questionnaire (SPQ).This is because the researcher thought this information might affect or influence students' practical intelligence. Students' profile in the different categories was thought to give salient explanations on the result of this study.

Information on the different characteristics of the students such as rank order in the family, performance of household chores, responsibility in the class or club and engagement in sports are presented in the succeeding table.

Table 3
Student responses in selected items from the Student's Personal Questionnaire

SPQ Item	Category	Conventional Approach Group		PI Approach Group		Total	
		N	%	N	%	N	%
Rank Order in the Family	1st	24	50.00%	24	50.00%	48	50.53
	Middle	10	20.83%	14	29.16%	24	25.26
	Last	12	25.00%	6	12.50%	18	18.95
	Only	2	4.16%	2	4.16%	4	4.21
Performance of Household Chores	Yes	43	89.58%	35	77.77%	78	82.11
	No	5	10.42%	11	22.91%	16	16.84
Responsibility in Class/Club	Officer	10	20.83%	12	25.00%	22	23.16
	Non-Officer	38	79.16%	34	70.83%	72	75.79
Engagement in Sports	Yes	31	64.58%	29	60.41%	60	63.16
	No	17	35.41	17	35.41%	34	35.79

It could be seen from Table 4 that 48 or half of the students (50.53%) rank 1st among the siblings in the family, 24 (25.26%) are middle child, 18 (18.95%) are youngest child and 4 (4.21%) are only child. Most of the students (82.21%) do household chores while 16 (16.84%) do not do household chores. Twenty-two (23.16%) of the students are class or club officers while most of them (72 or 75.79%) are not officers. Majority (60 or 63.16%) of the students are engaged in sports while 34 (35.79%) are not engaged in sports. These data mean that the

Volume 1, Issue 1, 2016
P-ISSN: 2672-2984
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research participants are not really exposed to doing or exercising practical tasks than when they are actively engaged in sports or take an office in the class or club.

Majority of the students fall under the 1st and middle child category. According to them, their parents did not expect them to be contributing a lot when it comes to doing household chores since they have maids in the house. Their parents pampered them and made them feel they are a blessing from God but despite this, most of them still do household chores but not on a daily basis. In taking responsibility in the club, only a few hold a position or office. According to them, they wanted to focus more in the academics since holding a position in any organization is demanding of time and effort hence, less social and interpersonal skills were developed in them. With regards to engagement to sports, most of them are playing games but not on a regular basis. Most of the time, they play with their family members or close friends.

Information gathered from the SPQ questionnaire was necessary as they led explanations to various aspects of the study. These are practical skills necessary for daily life and the skills' development level could seriously promote or hamper our successful adaptat`ion in the surrounding material or social environment (Malgozata, Berzina, 2000).

Students from both groups had almost the same profile in terms of SPQ items such as rank order in the family, performance of household chores, responsibility in class or club and engagement to sports. It came out that the research participants are not really practically oriented.

The Instruments

The researcher designed several practical intelligent tests for this study that were used to gather quantitative as well as qualitative data. The instruments that were used are as follows:

The Social Attributes Checklist

This instrument is based on Eric Digest website's *Social Attribute's Checklist*. The checklist is intended as one of a variety of ways to measure the social well-being of children. This checklist is used by the researcher in order to observe changes in the social structure of both groups. How children act toward and are treated by their classmates (cooperatively or aggressively, helpfully or demandingly, *etc*.) appears to have a substantial impact on the relationships they develop (Ladd, 2000). The test is divided into three parts namely, individual attributes, social skills attributes and peer relationship attributes. Likert scale will be used by the teacher to rate student's behavior in each category: Individual Attributes, Social Skills Attributes and Peer Relationship Attributes

Treatment

The Conventional Group

The conventional group was taught using the traditional lecture-discussion method. After each session, students were given assignments consisting of questions to be answered. These assignments may be answered before the discussion or incorporated into the discussion. The topics to be covered weekly were similar for both groups. Administration of tests was done during the same day and monitored by the same teacher-researcher.

The PI Approach Group

The designs of the lessons for the PI group follow a format based on the four-prong model of Sternberg and Davidson (1989). This model draws upon Vygotsky's (1978) idea that learning is most effective when it occurs first in a social context and is only internalized later.

In this approach, the teacher provides lessons that describe the global purpose of the lesson and give the underlying theory or rationale for teaching it. The objectives and time planner help the teacher become quickly aware of the specific skills to be taught and the timing of the lesson. Information concerning prerequisite skills, an estimate of the amount of time needed for the lesson, and the necessary materials facilitate preparation.

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The teacher starts out by giving students an orientation to the concept being taught. First, the teacher taps the students' prior knowledge, which gives the teacher an opportunity to correct incorrect information and a chance to see the way students have learned to think about the topic. The teacher presents new information via lecture, discussion, questionnaires, and the text.

Students then meet in small groups to try to apply their new knowledge and skills. This part of the lesson includes games, activities and work sheets. It allows for greater variety in the lessons, creating a sense that "something new may happen" in the Practical Intelligence" class. Afterwards, students evaluate their use of the new knowledge or skill. They also critique their work and the material being taught.

Finally, the teacher provides integration activities that encourage the students to apply their new knowledge in their own lives. These activities are intended to help bring about the transfer of the new knowledge or skills to situations other than school.

The researcher also integrates additional activities that may enhance students' practical intelligence such as:

- more exposure to laboratory work focus on the practical application of the processes learned
- inclusion of real-life problem solving, stressful situation or critical incident tasks.

Preparing the Classes for the Study

The day before the administration of the pretests, the students in the PI group were first oriented regarding the topics to be covered as well as some of the planned activities. The necessary classroom preparations for the entire duration of the study period were also done during this time. The teacher-researcher decided to teach both the PI and conventional groups for two reasons: (1) the training of another teacher on the rationale and implementation of the various teaching strategies to be used in the study would take a considerable amount of time and (2) correct implementation of the teaching strategies must be ensured in order to maintain a clear distinction between the PI approach and the conventional approach. To minimize or eliminate possible researcher bias, the teacher-researcher asked one of the regular science teachers and the assistant principal to observe the teacher-researcher during the treatment period.

RESULTS AND DISCUSSION

Findings from the study was presented, analyzed, and interpreted. This presentation will consist of sections focusing on comparison of student performance based on the Social Attributes Scale (SAS) before and after the treatment.

Comparability of Groups

First Quarter Grade (FQG)

The mean, standard deviations and result of an independent samples *t*-test in the first quarter grade of the students in the two groups are presented in Table 4.

Table 4

Independent samples t–test for students' previous semester grade

Teaching Approach	N	Mean	SD	df	t ratio	Sig.
Practical Intelligence (PI)Approach	55	84.56	3.940	89	.298	.766
Conventional Approach	55	84.33	3.393			

No significant difference was found in the first quarter grade of the conventional group and the PI Approach group. This means that the students from both groups were comparable in terms of academic achievement. This was because both classes were composed of semi-homogeneously high-achieving students with the same number of honor students. Both groups

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were observed to be well-disciplined and well-behaved by their teachers. Generally, the students were predisposed to learning new things everyday.

The teacher was very comfortable in teaching the PI Approach group and had no difficulty in making them participate in the daily activities. The students easily adjusted to the treatment with them developing a mindset with the expectation that "There will be something new that will happen each day". There was no apprehension on the part of the researcher about any possible negative changes on students' disposition and attitude about the subject. Based on the students' behavior and responses, it was clear that they were open-minded as they did and analyzed things practically.

The conventional group was also composed of high-achieving students. For the entire duration of the study, the lessons and activities prepared for them were well participated and appreciated though sometimes, they would clamor for more hands-on activities and group work. There were some instances where in they felt uncomfortable that the other group was doing a different set of activities but it was made clear to them that there are different ways to understand the lesson. Despite this observation, the control group did not lose enthusiasm and interest in learning the lessons. This may be accountable for their proper disposition and perception to learning new things.

Social Competence

Social competence can also be affected by the social context and the extent to which there is a good match between the child's skills, interests, and abilities and those of peers. Socially competent person is able to select and control which behaviors to emit and which to suppress in any given context, to achieve any given objective set by themselves or prescribed by others. A child's social competence depends upon a number of factors including the child's social skills, social awareness, and self-confidence. Social skills describe the child's knowledge of and ability to use a variety of social behaviors that are appropriate to a given interpersonal situation and that are pleasing to others in each situation. Children who have a wide repertoire of social skills and who are socially aware and perceptive are likely to be socially competent (Barab & Plucker, 2002). Similarly, socially incompetent children are often more interested in "getting even" with peers for injustices than they are in finding positive solutions to social problems and expect that aggressive, coercive strategies will lead to desired outcomes.

In this study, social competence was measured using Social Attributes Checklist. The SAC is an observational checklist that measures students' personal, social and peer attributes at the start and at the end of the study.

It is basically a teacher's observation checklist of personal, peer and social attributes of the students. It includes descriptors that the teacher-researcher accomplished at the start and towards the end of the treatments.

Table 16 shows the SAS pre and post observation scores of the groups.

Table 16
Comparison of SAS mean pre-observation and post-observation scores

SAS Attributes	**PI Approach Group**		**Diff**	**Conventional Group**		**Diff**
	Pre-treatment observation	Post-treatment Observation		Pre-treatment observation	Post-treatment Observation	
Individual	49.25	55.88	6.63	55.20	54.75	-0.45
Social	51.00	53.33	2.33	52.00	53.66	1.66
Peer	51.17	55.58	4.41	54.83	55.91	1.08
Total Diff			**13.37**			**2.29**

It can be seen from Table 15 that both the PI Approach and conventional groups had

increases in their posttest scores. However, there is a difference of 11.08 points between the two groups in favor of the PI Approach group. In terms of gain scores, a difference was also seen. In the SAS, both the PI Approach and conventional groups increased in their posttest scores. However, the PI Approach group scored higher than the conventional group. It was the self and social attributes where the students from the PI Approach group improve the most and least in the peer attributes.

Analyzing the changes in the individual items of the SAS, the researcher found that there were significant changes from the first observation to the second observation scores of the PI Approach group in items 1, 2, 3, 6, 7, 8 of Individual Attributes, items 3, 4, 7, 8, 12 of Social Skills Attributes and items 1 and 3 of Peer relationships while there were significant changes for the conventional group in items 2 of Individual, items 4 and 5 of Social Skills, and item 2 of Peer Relationship. The PI Approach had more significant improvements in the different items but upon comparing the scores of the two groups in the items of the SAS after the treatment, it was found that the two group significantly differ in item 6 of Social Skills and item 1 of Peer Attributes with the conventional group having higher scores in these items.

Conclusion and Recommendation

Students from the PI group demonstrated more improvement in their relationships with each other and with their group mates. Coherence in their group was evident as they were used to doing things on a group basis. As the treatment went by, a more organized and coordinated group were seen in the class. However, strengthened class cooperation was not that evident. Most activities are rated by group so the interaction was limited within the group members. It was also noticed that there was a tendency for both treatment groups not to reach out to other students outside their group during activities. This is maybe because of strong competition that clearly existed since the classes are high achieving and a lot of the students are in the honor roll.

Teachers should use more practical task-based approaches in their classrooms since they could help improve the students' social attributes which is very crucial to learning. Having more collaborative work can encourage more development of social skills among students.

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Volume 1, Issue 1, 2016
P-ISSN: 2672-2984
E-ISSN: 2672-2992
www.sajst.org

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