

Attitude of Marine Engineering Students on Some School-Related Factors and their Academic Performance in Electro Technology 1 and 2

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Abstract⁴

It is the major purpose of this study to determine the relationship between the academic performance of Marine Engineering students in Electro Technology course and their attitudes towards the subject itself, the instructor's methods of teaching and the learning environment. Descriptive-correlation method of research was utilized in the study. Results showed that more than one-third of the population of the Third year marine Engineering students has average rating performance in Electro Technology 1 while good performance in Electro Technology 2. Students have high positive attitude towards the subject itself more than the instructors' methods of teaching and the learning environment. Positive correlation has been also concluded between the final grades in Electro Technology and the attitude towards the subject and the teachers' method of teaching. Enhancement of students' interest towards the subject is suggested to get better appreciation of the profession. Instructors may relate the topics to real life situation in the work environment especially the maintenance, operation and installation of different machineries and systems in the vessel, as well as the development and construction of marine vessels.

Keywords: Electro Technology, Marine Engineering, Academic Performance

1. Introduction

Attitude is considered an important aspect of learning process that controls the behavior to act positively or negatively towards the environment. It guides the development of certain character to do something remarkably based on the point of view that drives the feeling to take actions. It also carries the mood on how to accept things in certain condition or situation especially in the classroom. Bulaklak and Pilobello (2014) defined classroom as an environment where students expressed their behavior related to academics during lecture session, physical and mental activities.

Zacharias (2007) explored students' attitudes toward teacher feedback. The study used a triangulation of participants and methods in which the practice of feedback was seen from the perspectives of students and teachers collected from the quantitative data (questionnaires) and qualitative data (open-ended items in questionnaires and interviews).

Educators tend to operate with an understanding that effective teaching processes will generate learning that appropriate assessments can then detect (Marzano, Pickering, & Pollock, 2005; Wiliam, 2011). Velasco et al. (2015) emphasized that students enjoy learning and they get a sense of accomplishment from achieving and they like to learn most of the time especially when the subject is interesting. Laguador and Piol (2010) believed that teacher is not the only factor may consider to the academic performance of the students. The

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students' attitude towards the course and learning environments may also include as variables to be investigated.

Lyceum of the Philippines University-Batangas also focused its instruction in the development of its learning outcomes to ensure the competency of the students (Barcelona et al., 2015). Garcia et al. (2015) stressed that part of the implementation of Outcomes-based Education is the sufficient learning environment which is an important aspect to support the quality of education being offered by all academic institutions. The adequacy of facilities and provision for technological advancement would lead each student to better understanding of their courses and improved interest towards their enrolled degree program.

Environment really affects the attitude of the person. If a certain student works and occupies an atmosphere which has excellent teachers, friendly classmates, state-of-the-art facilities and which is free from bad influence and peer-pressure, he is expected to perform very well in school and obtain high grades as measures of having a first-class school environment.

A student's perception that performance on a task may be useful in the future provides an important aspect of the expectancy-value model as it relates to student performance motivation on state assessments (Eccles & Wigfield, 2002). When a student believes that performance on an academic assessment offers meaning to him or her, and he or she places value on the outcome, the student is more likely to engage in the task with greater levels of effort to perform at a higher level (Ryan et al., 2007; Zepa et al., 2011). Eklöf's (2006) found that in order for students to place value on an activity, such as performance on state assessments, they must believe that greater effort on the activity is worthwhile. Therefore, the value that students place on state assessments offers prospective insight into the effort they will invest in their performance.

One way of determining the progress of students is through the results of their final grades. There are many identifiers that would possibly determine and affect the academic performance of the students. In this study, the researchers emphasized the importance of the students' attitude towards some school-related variables in relation to academic performance in Electro Technology 1 and 2 subjects.

Electro Technology is a fast developing, high tech industry spanning occupations in the electrical, sustainable energy, electronic, communications and information technology fields. The nature of the industry is merging and growing as technology changes and develops and new fields, such as data communication, home automation, intelligent systems for industrial and facilities management, fire and security systems and other new technologies, are being developed and applied ("Electrotechnology", 2014).

LIMA Faculty members, administrators, BS Marine Engineering themselves and future researchers will be benefited to the findings of the study. In this way, the LIMA faculty members in general will be given insights on how the students perceived their teaching strategies. The students themselves will also be oriented regarding their attitudes towards Electro Technology subjects and their environment. This will also serve as a reference to the future researchers who would like to delve in the same study but in different variables, time and setting.

This study will determine whether if there is a significant relationship between the academic performance in Electro Technology 1 and 2 subjects of marine engineering students and some school-related variables such as: the subject itself, the instructor's methods of teaching and the learning environment.

Understanding the characteristics of the Marine Engineering students towards school related factors would provide clearer picture on how teachers may address the needs and concerns of their students which impels the researchers to pursue this study. The results of this study are intended to provide insights to the faculty members on how the students perceived their teaching methods in handling Electro Technology subjects. This will also provide action plan on how to enhance the level of students' attitude towards some school related variables and their performance in Electro Technology

Objective of the Study

It is the major purpose of this study to determine the relationship between the academic performance of Marine Engineering students at Lyceum International Maritime Academy (LIMA) and their attitudes towards some school-related factors. Specifically, this study aimed to determine the final grades of BS Marine Engineering students in Electro Technology 1 and 2 during S.Y. 2013-2014; to identify the attitudes of students toward Electro Technology 1 and 2 courses considering the subject itself, the instructor's methods of teaching and the learning environment; to analyze the significant relationship between the final grades of marine students in two Electro Technology Subjects and the level of their attitude towards some school – related factors.

Ho: There is no significant relationship between the final grades of marine engineering students in Electro Technology Courses 1 and 2 and the level of their attitude towards some school – related factors.

2. Review of Literature

Attitude is one important building block of a person particularly the students to achieve their aspirations successfully or sometimes experience hopelessness and dejection. Possessing the right attitude towards something would mean an exceptional end-result and vice-versa (Flores et al., 2015). Changing or enhancing the attitude of the students towards school related factors would help them achieve the proper way of learning the skills they need after graduation (Agena, et al., 2015).

The investigation made by Holfve – Sabel (2006) focused on student attitudes and looks at school quality from the perspective of affective variables rather than students' knowledge or abilities. The concept of attitude includes ways of feeling, thinking and behaving and maintaining an expression of one's identity within the environment.

Previous research establishes the powerful ways instructors influence how students respond to and in a course. But two researchers wondered if the instructor was the only factor influencing student attitudes. They tested the seven factors and found that four of them explained 77 percent of the variations in attitude toward the course: instructor, course topic, course execution, and the room (Curran & Rosen, 2006).

Furthermore, Curran and Rosen (2006) found out that student him- or herself was not found to significantly contribute toward attitude about the course. The findings confirm that students (at least those in this cohort) do not understand that they are at least partially responsible for what happens to them in courses. It seems to reconfirm the extremely passive orientation many students take toward knowledge acquisition.

Teaching remains as the noblest profession, not only because it was introduced by Jesus Christ through His way of life, but also because man himself serves as the ultimate beneficiary and output of the said profession (Fajardo, 2014).

Instruction is one of the major concerns of the academic institutions on how to get it excellently delivered to the students and how could it really define their quality and reputation. Teachers are always in the forefront of the most important and key services rendered by the university. Keeping them abreast with the latest innovations and pedagogies in teaching would provide better learning atmosphere in classroom setting. Morales (2014) emphasized the integration of technology in the curriculum and instruction which would bring about significant student achievement leading to deep understanding of concepts for probable positive impact on student learning and achievement.

In recent educational development, the reinforcement of teaching through a diagnostic test has served as a tool to measure students' performance, which leads to enhancing or reminding students to have a good performance. This has been very useful for classroom teachers because it may give them satisfaction and confidence to work with the students (Elis, 2013).

Develop the courageous initiative to remind concerned administrators, proprietors and educational leaders to augment university provisions of teaching devices and materials in order to upgrade college instructors' teaching skills/practices in using multimedia-assisted instruction in English (Fajardo, 2014).

The process of studies consists of different elements, such as teaching, learning, assessment, etc. there are no doubts that assessment process goes along with learning process and influences it. Assessment of students' achievements in higher education didactics is considered as a problematic part of study process, in maritime studies this problem exists as well (Bartusevičiene, 2014).

Learning could be best acquired in a situation where students can easily adapt to the atmosphere that encourages active participation and cooperation among members of the class. Mauladin (2013) stated that it is important to provide a method of learning about the good and the bad, what should and what should not be done when one is in a shared living environment. Learning method provides not only moral ethics against fellow human beings, but also knowledge of the ethics of the environment.

Stability of utilizing and bringing advances to classroom instruction involves facilities and infrastructures that would support the maintenance of any computer-based teaching. Acquiring software application for laboratory courses of the students would provide hands-on experience for them to learn directly certain skills. Teachers are required to attend training and workshop to maximize fully the features of educational technology. Learning to adapt the environment and operations of a certain computer application would be somehow difficult especially to those baby boomers who are not really inclined with the new trends of digital natives.

Problems occurred in the inconsistency of integrating technology-driven teaching strategies which become the major issue which was confronted by underlying concerns under the institutional, departmental and student factors (Bay, 2013) in keeping the delivery of instruction interactive. Sustaining the learning environment with appropriate application of technology is necessary to promote innovation in bringing real life scenarios into classroom setting. Recent developments in instructional technology and multimedia learning environments indicate the need for new requirements or strategies for designers and developers who are responsible for developing project management and the planning of learning processes in education and industry (Ipek&Sözcü, 2014). Making it consistent would provide better knowledge and understanding on the discipline and better satisfaction on the delivery of instruction. Students would realize the benefit of utilizing technology as major instrument to the development of their skills and competencies. Mauladin (2013) stressed the selection of appropriate learning methods where teachers can develop young naturalist intelligence and knowledge that foster the children to about their environment.

The singular cycle of communication that operates simply in the classroom, has grown into plural complexities due to the proliferation of information technology and the growing networks of telecommunication everywhere in the world (Fajardo, 2014).

The issue of large class sizes which is commonplace in the university was found to be of concern by in-service learners who themselves have found it difficult to cope with even smaller class sizes in their schools. They have had to struggle with the same problem and know the disadvantages this phenomenon brings into education (Tawanaand&Nkhwalume, 2013).

Mindykowski (2014) mentioned that safe operation of many sophisticated ships today is greatly dependent on satisfactory skills and qualifications in the electrical, electronic and control engineering field being at all times available and more and more developed onboard.

In Marine Education & Training (MET), the use of simulators (engine or ship's bridge) is fact. Various maritime educational standards (i.e. STCW, 95, Manila 2011) allow the simulators using in educational practice. The aim for the application of simulators in MET is the transport of capacity which is the possibility to adopt the dexterities that are learned in a frame of training one in the operation of a vessel (Papachristos&Nikitakos, 2014).

3. Methods

Research Design

The descriptive type of research was utilized in the study. Descriptive survey method is appropriate for data derived from simple observational situations, whether these are actually physically observed or observed through the use of a questionnaire or poll techniques (Costales&Zulueta, 2003; Raza and Hanif 2015).

Participants

The respondents of the study are all third year Marine Engineering students enrolled during 1st Semester S.Y. 2014-2015 who finished Electro Technology 1 and 2 subjects. The respondents of the study were only limited to BS Marine Engineering of Lyceum International Maritime Academy to provide more specific interpretation, action and response to the findings of the study.

Instrument

A survey questionnaire was utilized in the study. The instrument was adapted from the similar study conducted by Laguador (2010) in the attitude of engineering students towards some school related factors. The questionnaire still had to undergo content validation of the expert from the Research Director and the Assistant Vice – President for Academic and Research and later after the approval of the conduct of the research study, pilot testing was administered to test its reliability.

Procedure

The questionnaires were administered personally by the researchers during the 1st Month of 1st Semester in SY 2014-2015 among Marine Engineering Students in LIMA. One-hundred (100) percent retrieval rating of the questionnaire is the goal of this study to achieve. Documentary analysis was conducted to gather the final grades of the Marine Engineering students in Electro Technology 1 and 2 from the Dean’s Office of LIMA.

Data Analysis

The gathered data were coded, tallied, analyzed and interpreted using percentage, weighted mean, rank, Pearson Product Moment Correlation Coefficient as statistical tools. The given scale was utilized to analyze and interpret the result of the study: 4.50 – 5.00: Strongly Agree (SA)/Very High (VH); 3.50 – 4.59: Agree (A)/High (H); 2.50 – 3.49: Moderately Agree (MA)/ Moderately High (MH); 1.50 – 2.49: Disagree (D)/ Low (L); 1.00 – 1.49: Strongly Disagree (SD)/ Very Low (VL).

4. Results and Discussion

Table 1: Final grades of BS Marine Engineering students in Electro Technology 1 and 2 During S.Y. 2013-2014

| | Interpretation | Electro 1 | | Electro 2 | |
|--------------|----------------|------------|-------|------------|-------|
| | | f | % | f | % |
| 1.00 - 1.50 | Very Good | 13 | 7.56 | 6 | 4.55 |
| 1.75 - 2.00 | Good | 50 | 29.07 | 50 | 37.88 |
| 2.25 - 2.50 | Average | 61 | 35.47 | 40 | 30.30 |
| 2.75 – 3.00 | Fair | 27 | 15.70 | 27 | 20.45 |
| Below 3.00 | Poor | 21 | 12.21 | 9 | 6.82 |
| Total | | 172 | | 132 | |

More than one-third of the population of the Third year marine Engineering students has average rating performance in Electro Technology 1 while good performance in Electro Technology 2 and less than 7 percent have obtained very good performance in both courses.

Table 2: Attitude of Marine Engineering Students toward Electro Technology Subject

| Positive Attitude Towards the Subject | WM | VI | Rank |
|---|-------------|-----------|-------------|
| 1. I like the subject because it requires critical and logical thinking and deep analysis which most of my classmates can follow. | 4.53 | SA | 1 |
| 2. I find this subject stimulating and challenging | 4.23 | A | 4 |
| 3. I find this subject relevant to my future career. | 4.31 | A | 2 |
| 4. I find studying Electro Technology easier than any other subject. | 4.02 | A | 6 |
| 5. I find lecture/hands-on as the most effective way to learn Electro Technology. | 3.78 | A | 7 |
| 6. I like this subject because I believe this is relevant to my course. | 4.28 | A | 3 |
| 7. I find Electro Technology subject interesting. | 4.19 | A | 5 |
| Composite Mean | 4.19 | A | |
| Negative Attitude Towards the Subject | WM | VI | Rank |
| 1. I do not like this subject because it is boring. | 3.03 | MA | 1 |
| 2. Electro Technology is one of the subjects I hate most. | 2.19 | D | 2 |
| 3. I feel irritable, uncomfortable and impatient in my Electro Technology class. | 2.04 | D | 3 |
| Composite Mean | 2.42 | D | |

The Marine Engineering students strong agree that they like the subject because it requires critical and logical thinking and deep analysis which most of their classmate can follow (4.53). They agree that they find this subject relevant to their future career (4.31) and they like this subject because they believe this is relevant to their course (4.28). They find Electro Technology as stimulating and challenging (4.23) and interesting (4.19) course. They find studying the course easier than any other subject (4.02) and lecture/hands-on as the most effective way to learn it (3.78) which obtained the least weighted mean scores.

Table 3: Attitude of Marine Engineering Students toward the Instructor’s Methods of Teaching

| Positive Attitude | WM | VI | Rank |
|--|-------------|-----------|-------------|
| 1. I like this subject because the instructor encourages first-hand experience as effective means of learning | 3.89 | A | 3 |
| 2. I am excited during hands-on activities which are considered part of teaching the subject | 4.28 | A | 1 |
| 3. I appreciate this subject since the instructor is able to relate their significance to modern society | 3.42 | MA | 4 |
| 4. I can grasp very well with my lessons since actual demonstration on Electro Technology is regarded as an effective means of teaching | 4.25 | A | 2 |
| Composite Mean | 3.96 | A | |
| Negative Attitude | | | |
| 1. I can’t develop a positive attitude toward this subject because the instructor keeps on criticizing students without giving suggestions for improvement | 2.17 | D | 3 |
| 2. I feel I can hardly understand this subject since the instructor is unable to communicate within students’ level of understanding | 1.89 | D | 4 |
| 3. I am losing interest toward this subject due to the instructor’s inability to maintain students’ interest | 2.46 | D | 2 |
| 4. It seems I am lost when learning this subject for lack of guidance from the instructor | 2.68 | MA | 1 |
| Composite Mean | 2.30 | D | |

However, they are moderately agree that the course is boring (3.03) and they disagree that the course is one the subjects they hate most (2.19) and they also disagree that they feel irritable, uncomfortable and impatient in the Electro Technology class (2.04). The composite mean scores of 4.19 and 2.42 on positive and negative attitude in the course, respectively implies that the Marine Engineering students have high positive level of attitude towards the course itself. Table 3 shows the attitude of Marine Engineering Students toward the instructor’s methods of teaching. The Marine Engineering students agree that they are excited during hands-on activities which are considered part of teaching the subject (4.28); they can grasp very well with their lessons since actual demonstration on Electro Technology is regarded as an effective means of teaching (4.25) and they like this subject because the instructor encourages first-hand experience as effective means of learning (3.89).

However, they are moderately agreed that they appreciate this subject since the instructor is able to relate their significance to modern society (3.42). Learning by doing is still the most effective way of transferring one’s knowledge to another especially to students. Various learning experiences can be best taught during actual demonstration with the machine or equipment on its operation.

They are moderately agree in the statement that it seems they are lost when learning this subject for lack of guidance from the instructor (2.68) while they are disagree in losing interest toward this subject due to the instructor’s inability to maintain students’ interest (2.46) and they also disagree in the statement that they can’t develop a positive attitude toward this subject because the instructor keeps on criticizing students without giving suggestions for improvement (2.17). Giving appropriate individual guidance for all students may sometimes overlook during laboratory session due to big number of students in one class, therefore, guidance is being given as a group as teachers still maintain the focus of the students and positive attitude is still evident during classes.

The computed composite mean scores of 3.96 and 2.30 for positive and negative statements, respectively implies that the Marine Engineering students have high positive attitude towards the instructor’s methods of teaching. Bay (2013) emphasized that PowerPoint presentations are highly effective in the delivery of instruction, along with Audio Video Presentation (AVP) and Video Tutorial Clips as effective strategies. Faculty members should have a deep theoretical background and appropriately conducted training based on specialized laboratories and simulators is needed. It is worthy to add, that a majority of ship owners presently have employed electrical / electronic officers, but at the same time many contrary situations were noted (Mindykowski, 2014).

Table 4: Attitude of Marine Engineering Students toward the Learning Environment

| Positive Attitude | WM | VI | Rank |
|--|-------------|----------|------|
| 1. I believe I am learning a lot since there is sufficient time for students’ learning. | 4.05 | A | 1 |
| 2. I am able to appreciate the importance of this subject because there is no problem on the availability of equipment for students’ use | 3.45 | MA | 4 |
| 3. I feel comfortable understanding this subject because the classroom is conducive to learning and the state-of-the-art facilities. | 3.67 | A | 2 |
| 4. Books related to Electro Technology are available in the library | 3.56 | A | 3 |
| Composite Mean | 3.68 | A | |
| Negative Attitude | | | |
| 1. I don’t like to study this subject because of unfriendly classroom environment | 2.18 | D | 3 |
| 2. I feel indifferent toward this subject due to the indifference between the instructor and students | 2.49 | D | 2 |
| 3. I don’t like this subject because there is insufficient cooperation and coordination among students | 2.53 | MA | 1 |
| Composite Mean | 2.40 | D | |

Student views about their experience at any educational system, its programs, the component units of the program, and the entire learning environment are essential aspects for quality enhancement (Bay

&Subido, 2014). The students believed that they are learning a lot since there is sufficient time for students' learning (4.05); they feel comfortable understanding this subject because the classroom is conducive to learning with state-of-the-art facilities (3.67) and the books related to Electro Technology are available in the library (3.56). Meanwhile, they are moderately agreed that they able to appreciate the importance of this subject because there is no problem on the availability of equipment for students' use (3.45).

They are moderately agree in the statement of not enjoying the subject because there is insufficient cooperation and coordination among students (2.53) while they are disagree in feeling indifferent toward this subject due to the indifference between the instructor and students (2.49) and disagree in not enjoying to study the subject because of unfriendly classroom environment (2.18). The composite mean of 2.40 implies that the students have positive attitude towards the learning environment.

Physical plant and facilities are major considerations in developing the proficiency of the students to handle equipment and machines needed for their respective fields of specialization (Dotong, 2014). Garcia et al (2015) also found out in their study of Marine Transportation where the students strongly agreed that the teachers motivated the students to learn and teachers provided adequate opportunities for independent learning specifically for Terrestrial Navigation 1. Mendoza et al. (2014) emphasized that learning could be best acquired in a situation where students can easily adapt to the atmosphere that encourages active participation and cooperation among members of the class. Teacher -centered involves the teachers' action to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation (Abanador et al., 2014). Devotion to live in a trouble-free environment is an indication of harmonious atmosphere of interpersonal relationship with costudents and teachers in school (Laguador, 2013).

Table 5: Relationship between the Final Grades in Electro Technology Subjects and the level of Attitude towards School – Related Factors

| School-Related Variables | CM | r-value | p-value | Interpretation | Decision |
|----------------------------------|------|---------|---------|-----------------|----------|
| Electro Technology Subject | 4.01 | 0.528 | 0.023 | Significant | Reject |
| Instructor's Methods of Teaching | 3.83 | 0.481 | 0.036 | Significant | Reject |
| Learning Environment | 3.65 | 0.247 | 0.179 | Not Significant | Accept |

There is a significant relationship between final grades of the students in Electro Technology and their attitude towards the subject itself and the instructors' method of teaching as denoted by the computed p-value of 0.023 and 0.036, respectively which are less than the 0.05 level of significance. Therefore, the null hypothesis of no significant relationship on these variables is rejected. This signifies that those students with high positive attitude towards the subject and method of teaching are also those students with high final grades in the subject. Reyes (2013) emphasized that the development of positive attitudes toward the subject may tend the students enjoy and become absorbed in activities that are well matched to their level of knowledge and skill.

Furthermore, the learning environment has nothing to do with the final grades of the students as denoted by the computed p-value of 0.179 which is greater than the 0.05 level of significance, therefore, the null hypothesis on this variable is accepted. This signifies that the level of attitude of students towards the learning environment is diverse across the students with high, average or low final grades in the course. This leads to the enhancement of the interest of the students towards the subject and the improvement of teachers' method of teaching in order for the students to get better grades in Electro Technology. The students need to believe that they can be successful in the future along this field of specialization; studying the course should be their top priority and finding this course stimulating and challenging (Laguador, 2014) would provide better view and appreciation of the things they need to be done at present which leads towards their achievements in the future.

5. Conclusion and Recommendation

The Marine Engineering students have high positive attitude towards the Electro Technology course as well as in the method of teaching and learning environment. They really like the subject because it requires critical and logical thinking and deep analysis which most of them can follow. But teachers must keep the discussion interactive in order for them to stay their focus in the topic. They are excited during hands-on activities which are considered part of teaching the subject. Learning by doing is considered important component of teaching process that would provide better experience and application of knowledge. Instructors may relate the topics to real life situation in the work environment especially the maintenance, operation and installation of different machineries and systems in the vessel, as well as the development and construction of marine vessels. Integrating technology in the presentation of topics during discussion and demonstration would provide better atmosphere to gain the interest of the students towards the course.

Providing proper instruction and direction would lead to well-informed members of the class towards a successful teaching and learning process which defines certain rules and regulations to follow by everyone for an orderly manner of day-to-day classroom activities (Agena et al., 2015). To further improve the ability to absorb what is being discussed by the instructor, more activities are suggested (An, 2014).

Electro Technology teachers may provide outcomes-based teaching and learning activities like interactive games and projects to encourage cooperation and coordination among students. Outcome-based education is a model of education that deviates from the traditional method of teaching which focuses on what the school provides to students but instead directs towards making students demonstrate that they "know and are able to do" whatever the required outcomes are (Reyes, 2013). They also believed that they are learning a lot since there is sufficient time for students' learning in the course and they feel comfortable understanding this subject because the classroom is conducive to learning with state-of-the-art facilities. The person-in-charge of the maintenance and administration of the equipment in the Electro Lab and classroom must always see to it that everything is in proper condition and working properly before laboratory activities start.

Future research may deal with other school-related variables that would influence the academic performance of the students aside from the variables used in the present study and be tested on students enrolled from other courses and college.

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