

Satisfaction of Philippine Merchant Marine Academy Cadets and Faculty on the Use of the Modular Approach in Teaching Professional Subjects

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Abstract – The main objective of the study is to determine the level of satisfaction, categorized into six (6) aspects (Quality of Lecture Notes, Teaching Quality: Lecture, Teaching Quality: Practical, Workload, Time Frame, and Assessment) of PMMA midshipmen/women as well as its faculty on the use of the modular approach in teaching professional subjects for the 1st Semester, SY 2016-2017. Document analysis, survey, and key informant interviews were conducted to gather data on the problem-at-hand. The study revealed that most of the respondents are from the College of Marine Transportation. The cadet-respondents are mostly 3CL and not sponsored by the Norwegian Shipping Association. Overall, the respondents are satisfied with the implementation of the program. The faculty-respondents have the highest satisfaction rating compared to NSA-sponsored and Non-NSA sponsored cadets. Moreover, the study revealed that there is a statistically significant difference between the levels of satisfaction of respondents. Finally, majority of the respondents would want the modular approach to still be utilized next school year. Based on these findings, the researcher recommends that the PMMA Leadership should decide on the continuity of the program, and if they have decided to continue, revisions and other concerns must be taken into consideration.

Keywords – satisfaction, maritime, modular approach, Philippines

INTRODUCTION

The Philippine Merchant Marine Academy in its commitment to adjust its operational capabilities to meet head-on the demands of the ever-changing world of maritime industry- specifically to address the shortage of instructors for the Bachelor of Science in Marine Transportation (BSMT) and Bachelor of Science in Marine Engineering (BSMarE) professional courses, the administration opted for the use of the modular teaching approach to encourage the PMMA graduates to teach in the Academy during their vacation or while on off-shore on a short-period basis. Moreover, the use of the modular approach is an attempt of the institution's Leadership to improve teaching and learning process.

It can be noted that the College of Marine Transportation (CMT) conducted full use of the modular approach in teaching all its professional subjects while the College of Marine Engineering used it on selected courses (see table 1). The general education courses (e.g., English, Math, Social Science, etc), on the other hand, were conducted in the traditional teaching where courses run throughout the semester.

Table 1. Subjects Taught Using the Modular Approach

Year Level	College of Marine Transportation	College of Marine Engineering
Fourth Class (4CL)	Nav 1 (Navigation Instruments w/ Compasses)	Draw 1 (Maritime Drawing and Diagram)
	Seam 1 (Ship, Ship Routine & Construction)	Machine Shop 1 (Hand & Measuring Tools)
	Met-O 1 (Meteorology and Oceanography)	Nat Science (Physics) Nav Arch (Naval Architecture)
Third Class (3CL)	DWatch 2 (Deckwatchkeeping 2)	Aux Mach (Aux Mach Basic Cons & Operating Principles)
	Nav 2 (Terrestrial and Coastal Navigation)	
	Seam 2B (Trim, Stability and Stress 2)	Machine Shop (Gas and Electric Welding)
First Class (1CL) - oldies	Seam 2A (Trim, Stability and Stress 1)	N/A
	Nav 1 (Nav Instruments with Compasses)	
	Seam 2A (Trim, Stability and Stress 1)	
First Class (1CL)- Original batch	Seam 4 (Cargo Handling and Stowage(dangerous goods))	N/A
	Nav 5 (Operational Use of Radar/ARPA)	

Modular approach to learning is becoming widespread nowadays as a form of innovative learning experience in education. A module, as described by Charles and Rajasekar [1], is a “unit of work in a course of instruction that is virtually self-contained and a method of teaching that is based on the building up skills and knowledge in discrete units”. As stated by Malik [2], modular approach dates back to B.F. Skinner and other’s research in the 1950s. Findings of their research led to the formulation of the different principles of teaching which are also the principles used in making of modules: division of subject matter into small steps, active participation of students, immediate feedback, and self-pacing.

A number of studies have also been conducted to measure the effectivity of the modular approach in comparison to the lecture method which is the traditional approach of teaching. Malik [2] looked into the general comprehension of students who have undergone traditional vis-à-vis modular approach. Finding of the study showed that there were significant differences in the two (2) groups’ mean scores, where the students taught through modular approach gained higher mean score in teacher made general comprehension-based test.

On the other hand, Sadiq and Zamir [3] explored the effectiveness of the modular approach in teaching at the university level in order to assess student learning, performance and achievement, and determine whether the modular teaching is more effective than the traditional approach. Results of their study showed that modular teaching is more effective as students learn at their own pace while it also helps maximize the student participation in the classroom with respect to the fulfillment of their given tasks at the spot.

Ali, Ghazi, Khan, Hussain, and Fatima [4] on the other hand, examined the development and effectiveness of the modular teaching in Biology at the Urdu Medium Government Secondary Schools. Results of their study revealed that the experimental group (modular approach) scored significantly higher than the control group (traditional method). This means that the modular teaching approach is more effective in teaching biology to secondary school students than the traditional method of teaching. Further, testing the significant difference in the scores of high achievers versus the low achievers, results showed that modular teaching appeared more favorable to the latter than the former.

Guido [5] also evaluated the modular teaching approach in materials science and engineering and

found out that the instructional module in materials science and engineering are effective for students’ knowledge adaptation and shows suitability to the level of the students’ acceptability to the faculty evaluators. Further, it revealed that the learning experience of the students is well simulated as there is trust that the module is valuable to the course. Consequently, the Loyola University Chicago has been administering an Undergraduate Survey Satisfaction every spring since 2006. The survey contains questions on the students’ satisfaction with the various aspects of the Loyola experience, including the Core Curriculum. The specific aspects of the Core curriculum that the survey measures are the following: a) regular faculty; b) part-time faculty; c) availability of courses; d) web-based resources; e) clarity of learning outcomes; and f) quality of learning. Analysis of survey results from 2006 – 2009 showed that there was a pattern of greater satisfaction for freshmen compared to other classes. In addition, the students were more satisfied with regular faculty in the Core than with part-time faculty. Overall, “there was some positive net change in satisfaction with the availability of courses and with web-based resources in the Core”, although there were differences by class as well [6].

Another study was conducted by Tessema, Ready, and Yu [7] which assessed the extent to which eleven academically related factors (i.e., required course availability for major, quality of instruction, major course content, variety of courses, capstone experiences, academic advising, overall college experience, preparation for career or graduate school, class size of major courses, grading in major courses, and course availability of electives in major) affect the overall satisfaction with major curriculum at a midsized public University. Findings revealed that each factor examined had a moderate to high positive correlation with the other factors as well as with overall satisfaction. The study also found out that five out of the eleven factors identified are significant in explaining satisfaction with major curriculum. These five factors are the following: preparation for career or graduate school, academic advising, capstone experience, quality of instruction, and overall college experience. Further, the study also looked into the effect of gender on satisfaction with major curriculum. Results showed that both males and females are satisfied and that gender has a significant effect on satisfaction although the effect is revealed to be small based on Cohen’s d effect size.

The present study assesses the level of satisfaction of the PMMA cadets and faculty on the use of the modular approach in teaching professional subjects for the 1st semester, SY 2016-2017. The level of satisfaction is categorized into different aspects: Quality of Lecture Notes, Teaching Quality: Lecture, Teaching Quality: Practical, Workload, Time Frame, and Assessment. As revealed by previous studies, the modular approach has been effective in providing knowledge and increasing academic achievement of the students. The students are also generally satisfied with undergoing modular approach. This study, as a result, shall validate these in the Philippine context. This approach shall, in the long run, be an answer to the problem of lack of technical faculty in the Academy.

OBJECTIVES OF THE STUDY

The study aims to measure the level of satisfaction of PMMA cadets as well as its faculty on the use of the modular approach in teaching professional subjects for 1st Semester, 2016-2017. The study aims to characterize the midshipmen and the faculty members; assess their level of satisfaction on the modular teaching; and analyze the differences and relationships in the level of satisfaction and perceptions on the modular teaching.

MATERIALS AND METHODS

The researchers used descriptive cross-sectional design of research to measure the level of satisfaction of student- and faculty-respondents on the use of the modular approach in teaching professional subjects for 1st semester, SY 2016-2017. In addition, document analysis of the modular curriculum and related literature were done to include surveys interviews to gather data from the respondents regarding the problem at-hand. The three hundred forty (340) PMMA cadets from twenty (20) class sections and fifteen (15) faculty members from the College of Marine Transportation (CMT) and College of Marine Engineering (CME) were asked to answer the survey-questionnaire. The survey-questionnaire was the main data gathering instrument of this study. An interview guide was also used during the key informant interviews with the two (2) college deans. The respondent's level of satisfaction on the six (6) aspects of the system such as the quality of lecture notes and reading materials, teaching quality: lecture, teaching quality: practical, time frame, workload, and assessment were obtained through the following scales: 5 = Very Satisfied; 4 = Satisfied; 3 = Moderately Satisfied; 2 = Unsatisfied; and 1 = Very

Unsatisfied. The survey questionnaire was reviewed and validated by the experts in the field of maritime education. The data were analyzed using frequency & percentile, mean, Likert scale, Analysis of Variance, and Tukey Post Hoc-Test.

RESULTS AND DISCUSSION

Profile of Respondents

Out of the three hundred forty (340) cadets surveyed, forty eight percent (48%) are 3CI students; thirty-five percent (35%) are 4CI; while only seventeen percent (17%) are 1CI. It should be noted that there are no 1CI from the CME since they were not subjected to the modular approach. The respondents are composed of sixty-three percent (63%) cadets from the CMT and thirty seven percent (37%) cadets from the CME. Sixty-seven percent (67%) of the cadets are not sponsored by the Norwegian Shipping Association (NSA) while thirty-three percent (33%) are sponsored by the NSA.

On the other hand, the faculty-respondents are composed of eleven (11) or seventy three percent (73%) from CMT and four (4) or twenty-seven percent (27%) from the CME. There are more CMT faculty who were subjected to this study because (1) more CMT subjects were taught using the modular approach than CME, and (2) most of the CME faculty who taught using the said approach are already on-board, thus, unavailable to accomplish the survey.

Level of Satisfaction on the Use of Modular Approach

The cadets who are sponsored by the NSA have rated Quality of Lecture Notes and Reference Materials as satisfied with a rating of 3.77. They have stated that they were provided with complete reference materials although it costs a lot to cadets. Consequently, Teaching Quality: Lecture was also rated as satisfied (3.85). This may be attributed to their responses that the teachers/instructors they had for the modular approach are good in delivery of the lessons, although a bit fast, and knowledgeable of what he/she teaches. Accordingly, they have rated Teaching Quality: Practical as satisfied with a rating of 3.72. The instructors are well experienced but more practical sessions are needed while the materials in the laboratories were not enough to accommodate all of the cadets. In the same manner, they have rated Workload as satisfied with a rating of 3.54 since they said the workload is normal and sufficient.

Table 2. Respondents' Level of Satisfaction on the Use of Modular Approach

Aspects	NSA-Sponsored		Non-NSA-Sponsored		Faculty		OVER-ALL	
	Mean	Qualitative Rating	Mean	Qualitative Rating	Mean	Qualitative Rating	Mean	Qualitative Rating
Quality of Lecture Notes and Reference Materials	3.77	Satisfied	3.56	Satisfied	4.20	Very Satisfied	3.84	Satisfied
Teaching Quality: Lecture	3.85	Satisfied	3.53	Satisfied	4.05	Satisfied	3.81	Satisfied
Teaching Quality: Practical	3.72	Satisfied	3.51	Satisfied	3.45	Satisfied	3.56	Satisfied
Time Frame	3.33	Moderately Satisfied	3.12	Moderately Satisfied	3.84	Satisfied	3.43	Satisfied
Workload	3.54	Satisfied	3.37	Moderately Satisfied	3.85	Satisfied	3.59	Satisfied
Assessment	3.66	Satisfied	3.49	Satisfied	4.00	Satisfied	3.72	Satisfied
OVER-ALL	3.65	SATISFIED	3.43	SATISFIED	3.89	SATISFIED	3.66	SATISFIED

Further, they have rated Assessment as satisfied (3.66), saying that the examinations can be hard but the questions are all in the handouts provided, and the cadets just need to review them. Conversely, they have rated Time Frame as moderately satisfied (3.33). They stated that the 4-hour lecture is too lengthy and can be boring, although, there are instances wherein the time allotted to a topic is not enough to cover everything, thus, the instructor rushes the discussion. Overall, the NSA-sponsored cadet-respondents have rated the modular approach as satisfied with a rating of 3.65.

On the other hand, the non-NSA-sponsored cadet-respondents have rated Quality of Lecture Notes and Reference Materials as satisfied with a rating of 3.56, which could be attributed to the fact that they said they have enough materials which are easily accessible, although, they said that some parts of the notes are unreadable due to the small font used. Accordingly, they have also rated Teaching Quality: Lecture as satisfied (3.53). They have mentioned that the instructors are focused, good, discusses the subjects thoroughly, shares their experiences, but, sometimes the lessons are taught too fast. Consequently, they have rated Teaching Quality: Practical as satisfied (3.51). They revealed that their instructors are good and give several activities to the students as well as share their experiences, however, the facilities are lacking and more time for practical activities is needed. In addition, they have rated Assessment as satisfied (3.49) since the examinations are according to what is in the lecture; however, they stated that the assessment should be

made by the instructor as he/she was the one who knows what has been tackled. On the other hand, they have rated Time Frame and Workload as moderately satisfied (3.12 and 3.37, respectively). The two (2) aspects are related such that they mentioned that the workload can be heavy as they have a short period of time for each subject, although, a number of the students also mentioned that the workload is good and manageable. With regard to time frame, they have stated that the time is either not enough (e.g., Drawing) or too long. Overall, they have rated the modular approach as satisfied with a rating of 3.43.

Finally, the faculty-respondents have rated Quality of Lecture Notes and Reading Materials as very satisfied (4.20) since they said that the lecture notes are provided to the cadets, however, the font size used should be enlarged in print out. On the other hand, they have rated Teaching Quality: Lecture as satisfied (4.05), wherein they mentioned that the instructors are satisfactorily good, however, the lecture techniques must be developed to effectively make the cadets understand the topics being discussed. In addition, they have also rated Teaching Quality: Practical as satisfied (3.45) since they said that the cadets were given opportunities to learn through practical sessions, but, the time is not enough for the sessions as well as the use of laboratories and practical sites. Accordingly, they have rated Time Frame as satisfied (3.84). They mentioned that an additional two (2) weeks should be included in the timetable to give time for the cadets to process the learning. Consequently, Workload was also

rated as satisfied (3.85) stating that the workload is okay if the instructor has only one subject, however, if he/she has two (2) or more subjects, then the workload gets heavy. Finally, they also rated Assessment as satisfied (4.00), stating that the examinations are prepared by the Dean, although they argued that the assessment should be done after every class schedule. Overall, they have rated the modular approach as satisfied with a rating of 3.89.

Table 3. Significant Difference in the Level of Satisfaction on the Use of Modular Approach in Teaching Professional Subjects

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.597	2	2.799	7.842	.000
Within Groups	125.630	352	.357		
Total	131.228	354			

Using One-Way Analysis of Variance, Table 3 shows that there is a statistically significant difference between groups ($F(2,352)=7.842, p=0.000$) at 0.05 level of significance. To determine which of the groups (Student-NSA, Student-Non-NSA, and Faculty) differed from each other, a Tukey Post Hoc test was conducted. It was found out that there was a statistically significant difference in the level of satisfaction between the Non-NSA students (3.43 ± 0.63) and NSA-students groups ($3.65 \pm 0.51, p=0.006$) and the NSA-students (3.65 ± 0.51) and Faculty groups ($3.89 \pm 0.69, p=0.012$). On the other hand, there is no statistically significant difference between the Non-NSA students (3.43 ± 0.63) and Faculty groups ($3.89 \pm 0.69, p=0.308$). The respondent groups have differing ranking of the aspects. For instance, both the faculty-respondents and the Non-NSA respondents ranked Quality of Lecture Notes and Reading Materials as #1. On the other hand, NSA-sponsored cadets ranked Teaching Quality: Lecture as the most satisfactory aspect of the modular approach. Accordingly, the cadet-respondents rated Time Frame as the least satisfactory while faculty-respondents rated Teaching Quality: Practical as the least satisfactory.

Positive and Negative Aspects of the Modular Approach as Perceived by the Respondents

The study also explored the positive and negative aspects of the modular system according to the respondents. Thematic analysis of the responses was

conducted since it is an open-ended question in the administered questionnaire.

Table 4. Positive Aspects of the Modular Approach as Perceived by the Respondents

Theme	Count	%	Rank
Students can focus on major subjects	81	22.69%	2
Provides the students with advance study/lessons	20	5.60%	4
Provides opportunities for practical learning	2	0.56%	11.5
Retention of topics/lessons discussed because lectures are one-at-a-time	10	2.80%	6
Continuity of the lessons since who the instructor is does not change	2	0.56%	11.5
Subjects are completed in the least possible time	177	49.58%	1
Instructors are good and knowledgeable of the topics being discussed	4	1.12%	9.5
Reference materials and lecture notes are complete	1	0.28%	13
The system is easier for students as it provides continuous learning	35	9.80%	3
Pose a challenge to students to cope up with the lessons discussed	5	1.40%	7.5
Easy to teach for the instructor	4	1.12%	9.5
No positive aspect	11	3.08%	5
No Answer	5	1.40%	7.5
TOTAL	357	100.00%	

Most of the respondents have stated that the modular approach is good because the subjects are completed in the least possible time with 177 responses out of 357 (2 respondents had 2 responses) or 49.58%. As validated by the interview conducted to the deans of both colleges. According to the CMT Dean, in the modular approach, the technical subjects (for all year levels) are taken up one-at-a-time and are divided throughout the whole semester. While CME Dean stated that only selected subjects in the 4CL and 3CL curriculum were taught using the modular approach and taken one at a time. Based from the interviews conducted, both deans have stated that the modular approach is actually more favorable to the instructors more than the students. They also stated that the computation of grades shall be easier because the faculty only handles 1 section compared to 4-6 sections during the old system. In

addition, all the necessary instruction materials including the examinations (departmental exams) are already prepared so the faculty will not formulate lesson plans and exams anymore. Further, because of this, the instructor's mastery of the subjects is developed (Instructors are good and knowledgeable of the topics being discussed). In addition, there are 81 or 22.69% respondents who indicated that they can focus on their major subjects since the major subjects are not covered simultaneously. There are 35 or 9.80% who noted that the system is easier for students as it provides continuous learning. And there are 20 or 5.60% respondents who expressed that the modular approach provides the students with advance study/lessons.

Table 5. Negative Aspects of the Modular Approach as Perceived by the Respondents

THEME	Count	%	Rank
Time frame is too fast and strict	66	18.44%	2
Limited time for discussions that results to difficulty in understanding and catching up of students especially those who are slow learners which results to failing grades of the students	159	44.41%	1
Too many information/topics being discussed which negatively affects retention of students	8	2.23%	7
Unavailability of or incomplete learning materials and equipment for practical	4	1.12%	8
Time is too lengthy which results to students getting bored	34	9.50%	4
The system discourages the students from participating in extra-curricular activities as absences in their classes would give them a hard time catching up with the lessons they skipped	16	4.47%	6
Absences of students/faculty would negatively affect lecture/discussion in general and students/instructors would have a hard time coping with the skipped lesson	43	12.01%	3
Minor subjects are treated as less priority	2	0.56%	11
Complicated teaching techniques by instructors which result to low comprehension of students	3	0.84%	9.5
Waste of time if the instructor would not teach	1	0.28%	12
No Negative Aspect	19	5.31%	5
No Answer	3	0.84%	9.5
TOTAL	358	100.00%	

On the negative aspects of the modular approach, 159 respondents or 44.41%, perceived that the respondents experienced difficulty in understanding and catching up with the lesson. There are 66 or 18.44%

who indicated that under the Modular approach, timeframe is too fast and strict. Thus, revisions or diversion from the schedule is discouraged. Further, the respondents (37 or 110.88%) stated that absences of midshipmen and/or faculty would greatly affect the discussion and his/her coping up with the skipped subject. This is in relation to the view of the respondents that they feel overloaded with information which results to low or failing grades of the students during assessment (43 respondents or 12.01%).

It can also be noted that 34 or 9.50% of the respondents stated that the time frame is too lengthy which results to students getting bored. This is validated by the CMT Dean. He stated that because the discussions are conducted continuously for 3-5 hours, students may feel bored and sleepy. But he encouraged the instructors to have breaks within the session.

On the other hand, it is also good to note that 16 or 4.47% of the respondents stated that the system discourages the students from participating in extra-curricular activities. In connection to this, CME Dean also stated that the Academy has a lot of campus activities including holidays that we cannot eliminate and these activities distract the system. As a consequence, facilitators have a hard time in scheduling make-up classes (Saturday or Sunday only, if both facilitator and students are available).

Table 6. Areas for Improvement on the Modular Approach as Perceived by the Respondents

ASPECT	COUNT	%	RANK
Quality of Lecture Notes and Reading Materials	32	8.94%	4
Teaching Quality: Lecture	61	17.04%	2
Teaching Quality: Practical	11	3.07%	7
Time Frame	147	41.06%	1
Workload	8	2.23%	8
Assessment	4	1.12%	9
Others	58	16.20%	3
No area/s for improvement	20	5.59%	5
No Answer	17	4.75%	6
TOTAL	358	100%	

One-hundred forty-seven (147) out of the 358 responses or 41.06% of the respondents have answered that the Time Frame should be improved when asked what is/are the things that should be improved in the modular approach. This result validates the previous results wherein the time frame has the least satisfaction

rating by the respondents. They have stated that the time frame should be adjusted and balanced. For instance, the more difficult topics should have longer discussions than the relatively easier ones. Further, the lecture hours should not be too lengthy so as not to bore the students. They have suggested that the lecture hours be divided in the morning and in the afternoon (e.g., for a 4-hour lecture, 2 hours for the morning session while the remaining 2 hours is afternoon session instead of continuous 4 hours).

On the other hand, the teaching quality of the instructor during lecture got 61 or 17.04%. The respondents stated that the teaching techniques of the instructors must be improved and that the latter must ensure that the topics discussed are understood by the students.

It is good to note, however, that a significant number, 58 or 16.20%, of the responses did not answer based on the aspects of the modular approach being examined. Instead, they have suggested that the system should just revert back to the old system, improve the facilities to be used for practical teaching, provide adjustment period for the students to familiarize themselves with the modular approach, develop teacher-student interaction in the classroom, and hire more full-time instructors.

This result is validated by the interviews with the college deans. They stated that the instructor has actually given the liberty on how he/she would implement his/her module. Thus, it depends on the instructor on how he/she will improve the system. Further, since the activities of the Academy cannot be eliminated, the facilitators should set up a way to bridge the gap between the 2 consecutive subjects that the students will take up considering the lapses, if any.

Respondents' Perception on the Continuity of the Modular Approach

When the respondents were asked if they would like the modular teaching program to be implemented next school year, one hundred forty six (146) Non-NSA or 64.32%, sixty-nine (69) or 61.07% NSA scholars, and twelve (12) or 80% answered YES. Conversely, seventy nine (79) or 34.80% Non-NSA Scholar, forty one (41) or 36.28% NSA scholars, and two (2) or 13.33% faculty members answered NO. There were 6 or 1.69% respondents who did not give an answer.

CONCLUSION AND RECOMMENDATION

Most of the cadet-respondents are 3CI, from the College of Marine Transportation, and not sponsored by the Norwegian Shipping Association. Overall, the

respondents are satisfied with the use of the modular approach in teaching professional subjects. The faculty-respondents have the highest satisfaction rating compared to cadet-respondents who are either sponsored or not by the NSA.

Using one-way ANOVA, there is a statistically significant difference between the levels of satisfaction of respondents. The respondents perceived that the good thing about the program is that the subjects are completed in the least possible time. However, the negative aspect is that the program provides limited time for discussions that results to difficulty in understanding and catching up of students especially those who are slow learners which results to failing grades of students. In connection to this, they perceive time frame as the area that needs to be improved. Finally, majority of the respondents would want the modular approach to still be used next school year.

Although the respondents have realized the benefits of using modular approach in teaching professional subjects, improvements must still be considered. For instance, both colleges must follow a standard format of the module. Further, they must discuss and identify the courses to be taught as well as the duration of using the modular approach so that consistency will be ensured. In addition, the modular approach should be redesigned to suit the needs of both the faculty and students in the aspect of timeline and workload. Balanced timeframe must be fulfilled so as not to either bore the students in a lengthy discussion or confuse them because too much topics have been discussed for the day. Finally, the institutional format of the module should be implemented and followed by both colleges for consistency of the academy's programs.

The researchers also recommend that for further studies, the effectiveness of the modular approach in comparison to the traditional teaching method on the student academic achievement be investigated to better grasp the advantages of the approach.

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