

Study on ubd books

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SAN BEDA COLLEGE BASIC EDUCATION DEPARTMENT A. Y. 2008-2009 “ A Study on the Usefulness of the UBD Books to the Pre-Engineering Students of San Beda College Rizal” In Partial Fulfilment of the Requirements For 3rd Quarter English Submitted to: Mr.

Angelo A. Dedace Submitted by: TULAGAN, Nicole C. 4-44 St. Anselm, The Pre-Engineering Class December 17, 2008 APPROVAL SHEET This research paper entitled “ A Study on the Usefulness of the UBD Books on the Pre-Engineering Students of San Beda College Rizal” in compliance to the requirements in the subject English for the third quarter is presented for approval Mr. Angelo A.

Dedace English Teacher A. Y. 2008 -2009 San Beda College Rizal Campus Basic Education Department ACKNOWLEDGEMENT The researcher would like to acknowledge the following: First of all, the researcher would want to acknowledge and give credits to Mr. Carlo N. Gutierrez for the non-stop support he has given in order to complete this study.

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.. 36 ABSTRACT In this term paper, the researcher has found out the sentiments of the 4th year pre-engineering students, batch 2008-2009, about the new curriculum implemented in San Beda College Rizal – the implementation of the UBD books. The UBD books were provided for better understanding of the lessons in the particular subjects Math, English, and Science. But in this study, the researcher intends to find out if the UBD books reached its aims to bring forth subject understanding to the students.

The author used methods such as surveying to gather the sentiments of the pre-engineering students regarding this matter. Through the collected data, the author was able to find some parts of the curriculum which can be changed or enhanced. The researcher was able to give some recommendations about the matter. It was proven that the books are indeed advanced in the lessons it teaches and that the books are truly able to provide neat and numerous examples about the subject matter. But it was also proven that the UBD books do not directly give a 100% education about engineering — the course these respondents will be taking in college.

INTRODUCTION This school year 2008 – 2009, a huge change in San Beda’s curriculum has been implemented. The BED of San Beda College has adopted a new method of teaching. This change particularly revolves around the subjects English, Science, and Math. This huge advancement is known as

the UBD. UBD, or Understanding by Design, is said to be a foundation for enhancing student achievement. It emphasizes the main role of the teachers – the designers of the building blocks of student learning.

The books aid the teachers in clarifying learning goals, devising revealing assessments of student understanding, and crafting useful and appealing tasks. The UBD books proliferate the prototypical systems of teaching.

According to the website ubdexchange.org, UBD reflects a “backward design” that delays the planning of classroom activities until goals have been clarified and assessments designed. But the focal point of this study doesn’t only revolve around these aims of the UBD.

It intends to know if these UBD books are really able to apply these goals to the pre-engineering students of San Beda College, Rizal. The study will try to prove if this newly implemented curriculum is effective in giving proper education to the students. It also aims to know if these books help in encouraging more the students to pursue an engineering course in the future. OBJECTIVES: • To be able to apperceive the perspectives of pre-engineering students of San Beda College Rizal about the UBD books. To learn if these students have learned something from the UBD.

• To learn if the books are effective sources of education. SIGNIFICANCE OF THE STUDY: This study is significant for the simple reason that it shows the perspective of pre-engineering students about San Beda’s new curriculum. In this case, proofs and feedbacks about the potency of the UBD will be shown. Through the seen feedbacks of the students, the school can now think of ways to find better means of implementing this curriculum. STATEMENT OF

THE PROBLEM: The researcher conducted this study to answer these following questions: 1. Does the UBD enhance the engineering skills of the pre-engineering students of SBCR? 2.

Does it supply the students with information related to engineering? 3. Can the students use the lessons they learn from the UBD in their future course in engineering? 4. Are the rental prices of the books reasonable? 5. Did the students get their money's worth? SCOPE AND LIMITATIONS: The researcher limits the study to the fourth year pre-engineering students of San Beda College Rizal Campus. The study involves only these students because the main topic is about the relationship between the UBD books and the pre-engineering students.

Other fourth year students are not part of the study because their opinions and answers will be different than that of those who will pursue an engineering course in college. HYPOTHESIS: The UBD books are effective sources of education for the pre-engineering students of SBCR. DEFINITION OF TERMS: 1. Curriculum- a course of study in a school, college, or university. 2. BED- Basic Education Department 3.

UBD- Understanding by Design; the newly implemented curriculum of SBC Rizal. 4. Proliferate- to increase in number or spread rapidly; to augment or increase in number. 5. Prototypal- classic. 6.

Focal Point- point of focus. 7. Apperceive- to know. 8. Perspective- a mental view or prospect. 9.

SBCR- San Beda College Rizal 10. Feedback- a reaction or response to a particular process or activity. REVIEW OF RELATED LITERATURE: The change in the curriculum of San Beda is particularly placed upon the subjects English, Science (Physics), and Mathematics. But how do these subjects help the students for their college engineering courses? Here are some points in which these subjects are of help: ENGLISH: A language is a systematic means of communication by the use of sounds or conventional symbols. It is the code we all use to express ourselves and communicate to others.

It is a communication by word of mouth. It is the mental faculty or power of vocal communication. It is a system for communicating ideas and feelings using sounds, gestures, signs or marks. Any means of communicating ideas, specifically, human speech, the expression of ideas by the voice and sounds articulated by the organs of the throat and mouth is a language. This is a system for communication.

A language is the written and spoken methods of combining words to create meaning used by a particular group of people. English language comes to our aid in our commercial transactions throughout the globe. English is the language of the latest business management in the world. English is a means not only for international commerce; it has become increasingly essential for inter-state commerce and communication. A lot of engineers nowadays are crossing the seas to find good jobs abroad. Abroad is where the salaries are big enough to raise a family comfortably.

That is why English is important – to be able to communicate well even if we are not in our own country. PHYSICS: Science is the process of applying

mathematical and logical analysis to determine the patterns and laws observable in our universe. We are rapidly closing in on the physical basis for the operation of the human brain in all its complexity and creativity. It is possible that within your lifetime we might see the first objective answers to the mystery of life. Most modern technology involves physics.

Any technology involving electricity, magnetism, force, pressure, heat, light, energy, sound, optics, etc. comes from physics. Even though the basic knowledge required for products like fertilizers, drugs, plastics, and chemicals comes from chemistry and biology, these items have to eventually be manufactured, and manufacturing is dominated by physics-based technology. The job market for people with skills in physics is strong. Engineers are applied physicists and comprise the second largest profession in America (second only to teaching) with about 1.

4 million members. By comparison, there are about 600 thousand medical doctors and only around 100 thousand biologists. However, even medical doctors and most biologists have to take college-level physics courses. Knowledge of physics is a prerequisite for many forms of employment. Engineers need physics in order to build the indigenous technology that is very vital to modern society.

MATHEMATICS: Arithmetic, algebra, geometry, calculus, differential equations, complex analysis, probability and statistics – Civil engineers and other kinds of engineers use all of these forms of math and many, many other forms as well. Most engineers actually spend a very small portion of their time carrying out mathematical calculation. But that does not mean

that mathematics is not important to engineering. In fact, mathematics is indispensable. Four different ways in which civil engineers (and other engineers) use mathematics: 1. To help them understand the chemistry and physics fundamental to the construction of civil engineering projects; 2.

To carry out the technical calculations necessary to plan a construction project; 3. To help them with modelling and simulations to predict the behavior of structures before they are actually built; and 4. To help them with business decisions and other “ non-technical” aspects of their jobs. 1.

To understand chemistry and physics. Civil engineers are frequently concerned with two fundamental technical questions: The first question, “ how strong is this material? can be answered through material science, which is a branch of chemistry.

The second, “ how strong will this part need to be? ” is usually answered by statics and dynamics, which are branches of physics. Now, long before the engineer ever enrolled in his or her first engineering class, he or she probably had a good understanding of the basic principles of chemistry and physics (from a high school science class, perhaps) and virtually all of these fundamental scientific principals are described, analyzed, proven, and predicted through the use of one or more form of mathematics. And let me stress that the math is not only needed to pass those classes in the first place, but even as the engineers (and scientists) apply scientific principals in their respective fields, they continue to use the mathematics which define these principals. 2. To carry out the technical calculations necessary to plan a construction project.

This is the more obvious aspect of the engineers' jobs that everyone tends to think about: " If a circular concrete support column for a particular bridge needs to be able to hold up 28 tons and the concrete being used can support 4, 575 pounds per square foot, what diameter does the column need to be? If the column is 22 feet tall, how many cubic yards of concrete will be needed to make the column? " ... that sort of thing. Engineers really do carry out some of these types of calculations, but the mathematics textbooks tend to simplify the problems quite a bit.

For engineers in the world, the support column mentioned above might also need to hold 28 tons after it is eighty years old, has been crashed into by three cars and a truck, and has survived four earthquakes and one flood. Now how would you calculate the diameter? By the way, don't forget that the concrete at the bottom of the column also needs to hold the weight of the column itself in addition to the 28 ton " load. " See? In the real world, the problems are always harder. 3. To help them with modelling and simulations.

These days, before anyone builds anything that costs very much money, they usually develop some type of mathematical model, and analyze it using a computer. A mathematical model is a set of equations which describe what we think would happen to something if we really built it the way that it is described in the model. You may have seen a computerized " stick drawing" of the space shuttle on the TV news, where they show the shuttle turning from side-to-side and it looks like it's three-dimensional. Well, that " stick-drawing" is a graphical representation of a mathematical model. And NASA did not make that computer model just so they could see what the shuttle

would look like, they made it so they could learn as much as they could about it before it was built.

Things like how it would fly, how strong certain parts would have to be, and how hot it would get on re-entry. The equations that describe what happens to any one part are not very difficult to write down, but solving the equations for all of these parts at the same time would be extremely time-consuming. That is why this type of modelling is almost always done using a computer. The computer solves the mathematical equations, the computer scientists programmed the equations into the computer, but (pay attention here) the engineers had to write down the equations in the first place. For that, they needed to know a lot of mathematics, especially calculus and differential equations. Many, many other engineering projects are modelled using mathematics, although the model may not be as complicated as the one for the space shuttle.

Engineering projects like bridges and buildings, which you may not here about on the TV news but which are also very, very important, are usually simulated or modelled before they are built. 4. To help them with business decisions and other “ non-technical” aspects of their jobs. The fact is, very little engineering ever occurs without someone spending some money, and in most cases, a whole lot of money. And because of that, many engineers spend a significant portion of their time concerned with the business aspects of their projects, as opposed to the technical aspects.

The point is, although civil engineers do have technical aspects of their jobs which require specialized mathematical skills, they also have many other

aspects of their jobs which require the same mathematical skills that most other professionals need, which should not be underestimated. Now that we know what the importance of each subject is, let us move on to how the students will learn the lessons within each subject. In what ways do the students learn through the UBD? -Developed by nationally recognized educators Grant Wiggins and Jay McTighe, and published by the Association for Supervision and Curriculum Development (ASCD), Understanding by Design is based on the following key ideas:

- o A primary goal of education should be the development and deepening of student understanding.
- o Students reveal their understanding most effectively when they are provided with complex, authentic opportunities to explain, interpret, apply, shift perspective, empathize, and self-assess. When applied to complex tasks, these “ six facets” provide a conceptual lens through which teachers can better assess student understanding.
- o Effective curriculum development reflects a three-stage design process called “ backward design” that delays the planning of classroom activities until goals have been clarified and assessments designed.

This process helps to avoid the twin problems of “ textbook coverage” and “ activity-oriented” teaching, in which no clear priorities and purposes are apparent. Student and school performance gains are achieved through regular reviews of results (achievement data and student work) followed by targeted adjustments to curriculum and instruction. Teachers become most effective when they seek feedback from students and their peers and use that feedback to adjust approaches to design and teaching.

- o Teachers, schools, and districts benefit by “ working smarter” through the collaborative

design, sharing, and peer review of units of study. In practice, Understanding by Design offers a three-stage “ backward planning” curriculum design process anchored by a unit design template o a set of design standards with attendant rubrics, o and a comprehensive training package to help teachers design, edit, critique, peer- review, share, and improve their lessons and assessments.

The Six Facets of Understanding: How Can We Ensure That Understanding Is Present Among All Students in Our Classrooms? Understanding is always a matter of degree, typically furthered by questions and lines of inquiry that arise from reflection, discussion, and use of ideas—including our attempts to understand understanding. . -Grant Wiggins and Jay McTighe, Understanding by Design, [1998], pp. 45 • Understanding by Design presents a multifaceted view of what comprises mature understanding. According to its authors, Grant Wiggins and Jay McTighe, six interrelated abilities cover the range of understanding behaviors students may exhibit.

These abilities are not hierarchical or taxonomic, but rather interconnected sides or facets of the jewel of understanding. • 1. Explanation: Students provide evidence to back up claims and assertions and provide thorough, supported, and justifiable accounts of phenomena, facts, and data. • 2. Interpretation: Students tell meaningful stories, offer apt translations, provide revealing historical or personal dimensions to ideas and events, and make learning personal through images, anecdotes, analogies, and models. • 3. Application: Students effectively use and adapt what they know within new settings and real-world situations, including authentic problem-solving,

decision-making, and conflict resolution. 4. Analysis of Perspectives:

Students observe both the big picture and the multiple perspectives that comprise it, examining and assessing various points of view or conflicting issues surrounding a topic, issue, or theme. • 5.

Empathy: Students walk in the shoes of a fictional character, historical figure, or contemporary individual. They perceive the experiences of these characters, figures or individuals with sensitivity based on their own prior experiences and find value in what at first may appear to them as odd, alien, or implausible. • 6. Self-Knowledge: Students monitor their own comprehension and revise, rethink, reflect, and revisit their growing understanding. They also can articulate what they understand—and fail to understand—in what they are studying or investigating.

METHODOLOGY In this study the researcher used a number of procedures in gathering and analyzing the data and information needed to complete it. This includes choosing the samples, data gathering and tallying, and analysis of data. In this chapter, the researcher would be discussing the methods used in completing this action research To review the problems that need to be considered, here are the aims of the study: 1. The study objects to conduct a study on the usefulness of the UBD books to the pre-engineering students of San Beda College Rizal Campus. 2.

The study is conducted to know if the UBD books provide the students information related to engineering. It also aims to find out if it enhances the engineering skill of the pre-engineering students. 3. It is also conducted to know the perceptions of the students about the lessons they learn from the

books. HOW THE SAMPLES WERE CHOSEN: Since the research is mainly about the relationship of engineering and the UBD book lessons, the author conveyed the study on the students in 4-44 St. Anselm, the pre-engineering section.

The researcher used a 100% sample from the students of 4-44 St. Anselm.

METHOD USED: The method of surveying was used because the researcher believes that it can give data directly from the respondents. Questions related to engineering and the use of the UBD books were prepared by the researcher. The questions formulated reflect the objectives of the study and cover the things needed to know by the researcher. The questionnaires were distributed among the thirty three students of 4-44 St.

Anselm and the students delivered their sentiments about the study by answering the surveys. Conducting surveys may be time-consuming but as a thesis methodology, it is one of the most accurate. It provides you direct knowledge of people's opinions and it can give you good data for your data analysis. ANALYSIS OF DATA: After the questionnaires were distributed and answered by the samples from the pre-engineering section, the data gathered were analyzed accordingly. The questions were to be answered in a " yes or no" form. After the questionnaires were answered, the researcher tallied the " yes" and the " no" answers in every number.

After getting the tallies, the percentage was computed. To compute for the percentage, this formula was used: $\frac{\text{Number of answers}}{\text{Number of samples}}$
By tallying these answers, the researcher was able to determine the perceptions and sentiments of the students. RESULTS OF THE STUDY

Question Number 1: *Do you use your UBD books in Math, Science and English often? | | | | YES | NO | | ||||| - ||||| - |||| | ||||| - ||||| - ||||| - |||| | | NUMBER OF ANSWERS |= 14 |= 19 | | | | | PERCENTAGE | 42. 2% | 57. 57% | ANALYSIS: - Only 42. 42% of the pre-engineering students answered YES in the question and 57.

57% answered NO. There are more who disagreed that the UBD books are used often than those who agreed. INTERPRETATION: -This only means that the UBD books are not regularly used by the students. The students observed that the books are only used in some cases inside the classroom (eg. For seat works and home works) Question Number 2: * Does your UBD in Math provide you with sufficient understanding of your lessons? | | | | | YES | NO | | | | | A LITTLE | | ||||| - ||||| ||||| ||||| - ||||| - ||||| - |||| | | NUMBER OF ANSWERS |= 10 |= 5 | | | | | |= 18 | | | | | | PERCENTAGE | 30.

3% | 15. 2% | | | | | | 54. 5% | ANALYSIS: - Only 30. 3 of the pre-engineering students answered YES in the question, 15. 2% answered NO and 54.

5% answered A LITTLE. More pre-engineering students say that they only understand a little of the lessons in the UBD books. - INTERPRETATION: -This means that the students didn't fully catch the aim of the UBD books - and that is to UNDERSTAND the lessons better by reading it. More than half of the class said that they only understand a little of the lessons in the books. Some of them fully understand the lessons when reading the books, but there are still a few who cannot decipher the kind of lessons being transferred to them.

Dominantly, the books provide understanding of the lessons, but not a 100% understanding. Question Number 3: * Do you think you need the science lessons you learn from your science UBD for your future course in college? | | | | YES | NO | | ||||| - ||||| - ||||| - ||||| - ||||| - | ||||| - || | | NUMBER OF ANSWERS | = 26 | = 7 | | | | PERCENTAGE | 78. 8% | 21. 21% | ANALYSIS: - 78. 8% of the class of 4-44 thinks that physics is essential to heir engineering course in college.

Only 21. 21% think that it isn't important. There are more students who say that they need physics in their college life and in their future career in engineering. INTERPRETATION: -This means that physics is an important part of engineering as perceived by the pre-engineering students. It positively agrees with the information provided in the related literature that most modern technologies created by today's engineers involve physics.

Therefore, the physics UBD book earned a good review from the students. Question Number 4: * Do you think the English lessons from your (English) UBD will help you pursue your dream of being an engineer? | | | | YES | NO | | ||||| - ||||| - ||||| - ||||| ||||| - ||||| - || | | NUMBER OF ANSWERS | = 20 | = 13 | | | | | PERCENTAGE | 60. 61% | 39. 40% | ANALYSIS: - 60. 61% of the class of 4-44 thinks that the English language is essential in taking a course in college and a good job offer in the future.

Only 39. 40% think that it isn't that important. There are more students who say that they need the English language in their college life and in their future career in engineering. INTERPRETATION: -The students primarily think that English is indeed needed for their future career. Since this language is a

major means of communication, learning it should be a huge advantage for them to get an excellent job in the future.

Just as stated in the related literature, A language is a systematic means of communication by the use of sounds or conventional symbols. English language comes to our aid in our commercial transactions throughout the globe. A lot of engineers nowadays are crossing the seas to find good jobs abroad. Abroad is where the salaries are big enough to raise a family comfortably. That is why English is important – to be able to communicate well even if we are not in our own country.

Question Number 5: * Does reading your UBD books help in encouraging you to become an engineer? | | | | YES | NO | | ||||| - ||||| - ||||| ||||| - ||||| - ||||| - || | |
 NUMBER OF ANSWERS | = 15 | = 18 | | | | | PERCENTAGE | 45. 5% | 54. 5% |
 ANALYSIS: – 54. % of the class of 4-44 are not encouraged by the UBD books to pursue an engineering course in the future. Reading the books didn't have any effect on their perception in taking an engineering course in the future. But, there is still 45.

5% of the class who are in some ways encouraged to more to take an engineering course in college. INTERPRETATION: – This only shows that the UBD books are not good sources of encouragement for the students to pursue an engineering course in the future. Only some are encouraged but still, more are not. The contents of the books are not really for promotion purposes of engineering courses. Question Number 6: * Do you think the UBD books provide you with sufficient information about engineering? | | | | |

YES | NO | | ||||| - ||||| ||||| - ||||| - ||||| - ||||| - |||| | | NUMBER OF ANSWERS |= 10 |=
23 | | | | | PERCENTAGE | 30. 3% | 69.

70% | ANALYSIS: – 69. 70% of the class of 4-44 says that the UBD books do not provide them basic information about engineering. Only 30. 3% says that the UBD books provide them with engineering facts. INTERPRETATION: – This shows that the UBD books do not give information about the basics of engineering – its meaning, the reason for studying it, how it is related to the production of technology in the future, etcetera. Most pre-engineering students do not find these kinds of data/facts in the contents of the books.

Question number 7: Does it enhance your engineering skills? | | | | | YES |
NO | | ||||| - ||||| ||||| - ||||| - ||||| - ||||| - ||||| | | NUMBER OF ANSWERS |= 8 |= 25 | | | | |
| PERCENTAGE | 24. 2% | 75. 8% | ANALYSIS: – 75. % of the class of 4-44 says that the UBD books do not enhance their engineering skills. Only 24.

2% says that the UBD books develop more their skills. INTERPRETATION: – There are a few students who say that the UBD books contain figures/exercises that enhance their ability to do engineering activities. But more said that they do not find anything in the books which makes their engineering abilities better. Since the books are mainly for the discussion of specific English, Science, and Math lessons, the books do not actually serve activities made for engineering. But still, some exercises may possibly be interrelated with it. Question Number 8: *Do you agree with this new kind of curriculum? | | | | | YES | NO | | ||||| - ||||| - ||||| - ||||| - ||||| | | NUMBER OF ANSWERS |= 13 |= 20 | | | | | PERCENTAGE | 39.

4% | 60. 61% | ANALYSIS: – 60. 61% of the students do not agree with this kind of curriculum. Only 39. 4% agree with it. There are more who are not yet used to this kind of curriculum than those who are.

INTERPRETATION: – This shows that the students are not fully willing to accept this kind of curriculum. In this question, the respondents were asked to write their reasons as to why they had those answers. Some said YES with the dominant reason that it provides many examples for a given topic with matching colorful pictures which make it more interesting for the students to read. But, many said NO for the dominant reason that it has a very expensive rental price. There were some who said that they can also buy books which have the same information but with lower price.

Some say that with the books' expensive prices, they do not want to return the books anymore. In short, the books may provide good examples and exercises for the topics and lessons, but the rental price is very expensive especially that it is only used infrequently. Question Number 11: *Do you think you got your money's worth? | | | | YES | NO | | ||||| -||

||||| -||||| -||||| -||||| -||||| - | | NUMBER OF ANSWERS |= 7 |= 26 | | | | |

PERCENTAGE | 21. 21% | 78. 8% | ANALYSIS: – 78. 8% of the respondents from 4-44 says that they didn't get their money's worth from the books.

Only 21. 21% agreed that they got their money's worth. INTERPRETATION: – The results show that most of the pre-engineering students believe that the money they paid for the UBD books is not 100% worth the learning it gives them. Just like in question number 8, the researcher asked the respondents to write their reasons for their answers. The 78.

8% of students said that the rental price of books is not worth the times they use it. They would have agreed to the fact that it is worth their money if they used the books more frequently, or if the school lowered down the rental price a bit more. CONCLUSION: In this research, the author has found out the following: -The UBD books, as part of the new curriculum of San Beda College Rizal Campus, is an effective system of education which provides a huge picture of the lessons for the students. It provides numerous examples in order for the students to picture in their minds the concept of the lessons inside the books. In relation to the pre-engineering class, the UBD books are able to supply knowledge to the students which can also be of help to the future course and jobs of the students. -The English lessons they learn from the UBD books are essential in their pursuit of success on the field of engineering.

The Physics lessons are also a big part in learning the basics of engineering. The concepts learned in the Physics UBD book can be applied effectively in the engineering processes and activities they have to do in the future. The Mathematics lessons they learn are also a big help for them to be better in engineering. With the ideas and basic mathematical steps and formulas they learn from the books, the students will be able to find it easier to survive college. But in this study, the researcher also found out that the pre-engineering students think that the books are too expensive in exchange for the benefits it gives them.

Since the books are not often used in the classrooms, the money they paid for the rental fee doesn't value up to the times these books are being utilized. -Also, since the books are made mainly for specific lessons in the <https://assignbuster.com/study-on-ubd-books/>

subjects English, Science and Math, it doesn't include contents which directly enhance the engineering skills of the respondents. It also doesn't have many contents which serve as encouragements to the respondents to become engineers in the future. It is not the best source of promotion for an engineering course in that case. RECOMMENDATIONS: With all these conclusions, the researcher would like to recommend the following: -With regards to the book being almost complete with advanced information and knowledge, there is nothing more to correct or develop.

But as to the rental price placed upon the books by the school, the author would want to suggest that the school lower down the price. They won't have to worry about getting the money spent to buy the books back because there are still the next batches that will pay the same amount of rental charges. Every year the school will get an amount to be paid for the books, and in time, the rental payments will already compensate for the money spent to buy the books. BIBLIOGRAPHY: ARTICLES: 1. What is "Understanding by Design": by Grant Wiggins, author of the UBD. 2.

The Six Facets of Understanding: by Jay McTighe and Grant Wiggins, authors of the UBD. 3. The Six Facets of Understanding: How Can We Ensure That Understanding Is Present Among All Students in Our Classrooms? : by Jay McTighe and Grant Wiggins, authors of the UBD. 4. Importance of the English Language: by Dr.

G. Manivannan WEBSITES: 1. <http://www.intuitor.com/physics/physmain>.

php -Explains why students should study physics in high school. 2.

<http://mathforum.org/library/drmath/view/56461.html> – Explains the relationship of mathematics to engineering.

APPENDIX