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Highly Motivated Learning through CBI: A Case of SDCA College Students

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Abstract

This study intends to investigate whether or not using highly illustrative pedagogical practice, through the use of computer and related technologies can indeed motivate students to learn and put into practice what they are taught inside the classroom. For students to grow fully as human persons, they should develop their minds through effective learning. Effective learning however is possible only if students are truly motivated to learn. Computer based instruction (CBI) can help in motivating students to learn and even put into practice what they are taught in class. Following Keller's ARCS motivational model in pedagogical practice, CBI is said to 'intrinsically' motivate students by drawing their attention while encouraging them to relevantly apply what they learn in class. Students also develop sense of confidence and satisfaction in their learning process through CBI. A survey of Saint Dominic College of Asia (SDCA) students was conducted. Results of the survey showed that majority of the students had absorbed better teaching materials when CBI was used than when CBI was not used. Results also revealed that CBI as an approach to teaching was preferred by students than non-CBI approach to teaching, confirming the hypothesis in this study.

Keywords: Computer based instruction; Intrinsic motivation; Experiential learning; Effective learning

Background

How many times in the past have teachers been able to really teach their students? Have they made their students truly learn their lessons? Indeed, the process of delivering effectively teaching materials to students is a serious consideration. And it never has to be neglected by those who are in the teaching profession.

The reason why classes are held is precisely to put students to learn well their lessons in schools. That should be the ultimate goal for every classroom teacher. To say the least, everything else is secondary to students' learning their lessons and applying these in their everyday experience. Students are sent to schools because they have to acquire knowledge about specific lessons or subjects. In turn, they try to learn such lessons and subjects in order to put them into practice later on – this is part of their growing up as human persons [1].

Human development through education

For any human person, development encompasses positive changes in all aspects of *physical, intellectual, behavioral, emotional and spiritual* constitution. Physically for instance, a human person naturally *develops* or *grows* in stature when he or she passes the stage of childhood to adulthood. Intellectually, a person develops his or her mind by increasing his/her knowledge or understanding of things. A person also grows behaviourally or even emotionally when he or she learns to have a better disposition over his or her passion. Likewise, a person may have been considered to have grown spiritually if values are properly imbibed in him or her by religion.

But human development through education, through formal classroom-based education comes about, as each individual person undergoes transformation in his or her cognitive ability, problem solving skills, behavioral ability and social-cultural makeup [2,3]. Fisher noted that improvement in one's abilities follow a specific continuum, in which each individual is transformed into his or her various domains of cognitive and behavioral qualities at a given point in time.

Likewise, human development through learning is a process of internalizing and reconstructing external activity, from which the learner derives meanings, understandings and interpretations, so as to achieve desired internal or cognitive goals. Lev Vygotsky refers to this mental process as 'movement from intermental to intramental' [4]. Likewise human development is a result of interaction between learners and adults, who are actually teachers [5] This is 'proximal development' or the "distance between the actual development and potential development level as determined through problem solving under adult guidance or in collaboration with more capable peers". Simply put, when one talks about human development through education, this involves increase in students' knowledge and comprehension through teachers' support and guidance.

Moving students to understand and apply even in mind what they learn

Teaching is both a commitment and an effort on the part of the teachers. When a teacher accepts a teaching load (regardless of how long it will be, i.e., for one term or semester or even for many long years), that teacher (who may be on a part-time or a full-time basis) has committed himself or herself not only to teach students, but most importantly to ensure that students indeed would learn in their 'heart' and in their 'mind' their lessons. Particularly, teachers should make sure that students would learn their lessons by heart by making sure that they would be interested in absorbing these lessons through proper motivation.

Teachers hence must find ways to motivate their students to learn, and inspire them to put in application, what they are taught inside the

classroom. Teachers can make use of two motivational approaches to capture the attention of their students: *intrinsic* and *extrinsic* motivation [6]. Through intrinsic motivation, students are prompted to learn in response to satisfaction of their own internal needs. These needs are: 1) their need for knowledge or intellectual growth; 2) need for curiosity (which prompts their interest and enthusiasm); and, 3) their *need for competence*. Through extrinsic motivation, students are moved to learn through factors external to them. Extrinsically changing behavior of students requires extrinsic conditions to act as motivators, such as *incentives* or *positive reinforcements* through grades, *rewards*, *praise* and *home phone calls* or even *punishments*. There is shortcoming however in the case of *extrinsic motivation*. This is when the learner focuses not so much on the desired learning outcome but rather on incentives and rewards. When this happens, eliminating incentives and rewards also tends to eliminate desired learning outcome [7,8].

Contrastingly, since intrinsic motivation has been the focus of many pedagogical efforts, it has resulted in long-tem high-quality learning and creativity effect. This does not mean however that extrinsic motivation is not important. Intrinsic motivation is developed within and it is this natural motivational tendency that is "a critical element in cognitive, social, and physical development because it is through acting on one's inherent interests that one grows in knowledge and skills" [8,9].

Enhancing learning through highly illustrative teaching practice

It is important that students pay close attention to what is discussed in class. Use of computer facility in teaching, such as PowerPoint presentation, helps draw students' attention. Computer images help students in their *observation*, by allowing them to derive or interpret meaning more easily from symbols or images used by teachers [10]. Through computer-based teaching, students are able to complete a specific set of educational objectives in less than the usual time [11].

Effective externally visible and motivating instructional facilities not only can enhance teaching, but also can help students in effectively absorbing teaching materials inside the classroom. Snowman, McCown and Biehler [12] noted that computer based instruction (CBI) or that which uses modern technology in classroom teaching increases significantly learning of students, rather than which uses traditional teacher-led and text-based teaching. Clearly, there are some things that computers can do that humans (i.e., teachers) cannot [13].

Images, pictures, diagrams, and even animations can quickly be illustrated or 'flashed' at each turn in classroom discussions through PowerPoint presentation– which teachers cannot readily do, unless they will be giving long hours of classes. There are also specific computer programs or softwares that can be used not only to easily demonstrate problems but also to show quick solutions to these problems (i.e., when elaborating formula in Mathematics). All these can conveniently be displayed on a computer-controlled digital projector used in discussions.

Putting into reflective practice what is learned

But learning through the use of technology should also be 'reflective' or 'interpretative' as well as 'experiential' [14]. Teachers should make sure that students not only will look for the '*what*' of things, but also their '*why*' and '*how*'. For instance, in Statistics, a teacher should be able to teach his or her students not only what formula should be used in computing measurement of central tendency or average (i.e., *mean*, *median* and *mode*) but also why such measurement is important for

them to study and how they can be used in the future.

Hence through CBI, the teacher should be able to show his or her students not only the formula and procedure for computing the average grade of "98" for a graduating student in all his or her subjects a course but also how such grade can be of use to him or her in the future. The teacher can 'flash' the students a caricature or an animation of the graduating student receiving a diploma in school, while walking towards a big establishment to symbolize his or her educational excellence. It can also symbolize his or her assured employment in the future. Here ultimately, students are encouraged not only to understand what they learn, but also to put operational and experiential meaning to it. This is called 'experiential learning' where students are encouraged to put into practice (at least in mind – although ideally this has to be done in actuality) what is taught to them inside classrooms and 'make sense' of it by applying it in their own everyday lives, i.e., in their home or workplace, today and in future [14-17].

In the end, this kind of learning is 'transformational learning', which is aimed at transforming or improving students for the better [18,19]. In fact, transforming individual students starts with changing and molding their mindsets and in turn, their actions. Transformation of individual students allows themselves to develop fully as human persons. As human persons, their development should be a holistic change, which involves both learning and transformation.

Goals in the Study

At the conceptual level, this research aims to come up with a tangible framework about how effective instructional practice, using modern technology, such as computer, can be used to fully draw and motivate college students to learn and put into practice at least in mind what they learn in actual classroom discussions. In developing such framework, it is important to consider specific theories particularly those related to specific approaches or techniques on motivation and enhancement of intellectual and cognitive capacities of students from which effective instructional practice/s can be conceived.

In a more practical level, this study intends to contribute to the current thinking as to how the use of technology can effectively deliver positive outcomes to students by motivating them to fully absorb and assimilate teaching materials and by helping them to apply these materials in their own lives. Drawing from various theoretical insights, the study presents intricacies as to how particularly, teaching with the use of computer technology, i.e. PowerPoint, can motivate students to learn their lessons and apply these in their own specific situations in life [20].

Main Questions

The main question for this research is: How does instructional practice through the use of computer facilities (such as PowerPoint) help in motivating college students, to learn and to put into practice what they learn inside the classroom?

The specific questions for this research are:

1. Does Computer Based Instruction – or pedagogical practice of using computer facilities (i.e. PowerPoint or PP) help in motivating college students to learn in terms of catching their attention? (Do they prefer to use PP or not?)

2. Does CBI, using of computer facilities relevantly help college students in effectively understanding what they learn in school and put this into practice in their own specific situations at present or in the future?

3. Does CBI or pedagogical practice of using computer facilities (i.e. PowerPoint or PP) help in motivating college students to learn in terms of boosting their confidence? (Do they find it easier to understand learning materials through the use of PP?)

4. Does CBI or pedagogical practice of using computer facilities (i.e. PowerPoint or PP) help in motivating college students to learn in terms of expressed satisfaction, through interest and enthusiasm they experienced? (Do they find it interesting to understand learning materials through the use of PP?)

Analytical Framework

Without education, humans cannot develop their own abilities and potentials. And yet without teachers, they cannot have rightfully their education. Humans hence can only grow intellectually when they interface with other 'skilled' humans, i.e., teachers, in a group or community [21]. Working the right way with teachers would allow a learner to grow through understanding and by engaging in activities that would help him or her learn and experience things [5]. Figure 1 above shows that learning is possible only if students are properly motivated inside the classroom [22].

An effective teacher is one who can motivate his or her students to learn better and put into practice what they learn, by: 1) drawing attention from learners; 2) developing a sense of confidence in them; 3) promoting satisfaction, through interest and enthusiasm; and 4) drawing relevance in what is taught, the teacher is able to effectively create intrinsic motivation among students [7,8,23,24]. All these comprise so-called ARCS (Attention, Relevance, Confidence, and Satisfaction) criteria which are needed to intrinsically motivate learners [25,26]. All these at the same time are possible through the use of CBI [5,27].

Instructional motivating design using technology generates students' attention, relevance or on-task application behavior, as well as confidence and satisfaction [5,23-25,28]. Using computer and related facilities, teachers can create appropriate learning environment that is able to motivate students to learn. Computers can also be used to create images, pictures and diagrams, that can be illustrated or 'flashed' at each turn in classroom to catch the attention of students and to make discussions clearer and easier for them to absorb [5,29]. Also, through modern technologies, students are made motivated to learn because they are able to easily process learning materials through inferences, explanations, answers or solutions to problems [30,31].

Computer-Based Instruction allows students to experience what they learn. Experiential Learning theory (ELT) underscores the central role that experience plays in the learning process [32]. With CBI, students are able to relevantly experience at least through 'abstract conceptualization' or 'reflective' or 'interpretative observation' what they are taught in class [2,3,32]. Through cognitive learning which involves acquisition of procedural knowledge, students are able to learn how to apply at least in mind what they learn inside the classroom [2,33]. Using CBI through reflection, the students are able not only to comprehend and analyze but also apply classroom learning materials thoughtfully, serving as intrinsic motivation in learning.

Computer-based instruction can bring students to 'procedural knowledge' which is about 'experiencing' in their mind what they learn and to 'changing' their behavior for their own good in the future. Experiencing knowledge through 'reflective observation' is not necessarily experiencing actually or directly 'in action' (i.e. through 'active experimentation' or 'concrete experience') what is taught to them inside the classroom, but rather doing reflective observation, which for

Note: Conceptual Framework is developed based on various principles and theories.

*Adopted from the book of Chandra, but focused on the idea of computer, through the use of PowerPoint and related facilities (including digital projector), in classroom teaching.
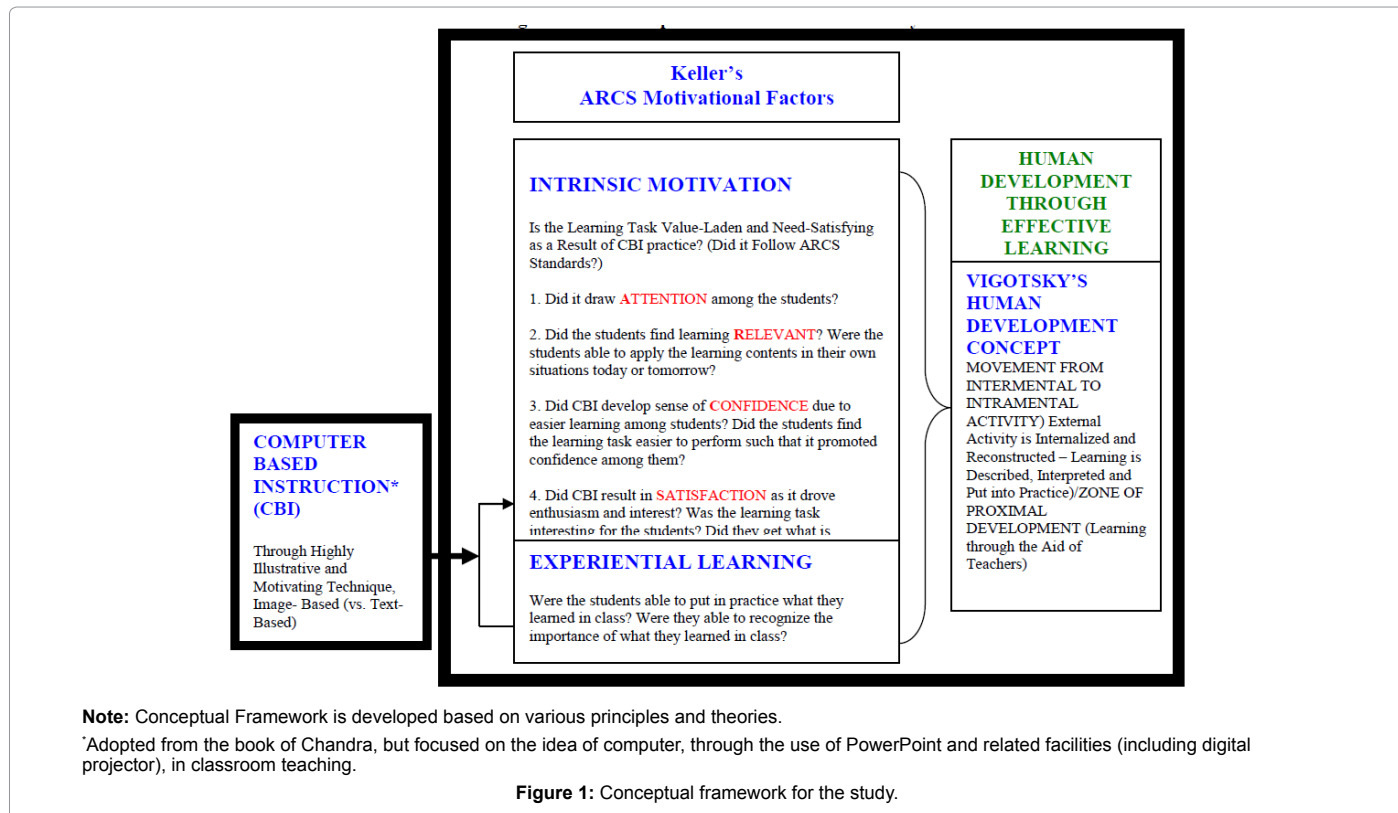
Figure 1: Conceptual framework for the study.

instance would involve "thinking more about the topic, asking new questions, or generating hypotheses" about what they learn [32].

While computer images, animations or simulations allow students to process more easily classroom information, they at the same time increase students' confidence as they think that they for themselves are able to handle their lessons well. Use of computers inside the classroom increases students' motivation because complex materials are made easier to store in mind through highly illustrative presentation. Students hence become interested and satisfied with their learning because they recognize that they are able to absorb learning materials more quickly and in shorter span of time [5].

As Keller [34] would put it, "We can say that in order to have motivated students, their curiosity must be aroused and sustained; the instruction must be perceived to be relevant to personal values or instrumental to accomplishing desired goals; they must have the personal conviction that they will be able to succeed; and the consequences of the learning experience must be consistent with the personal incentives of the learner."

CBI as source of learning motivation

Without proper motivation, no matter how highly enriching teaching materials are, students will not absorb or assimilate them in their mind. Teachers hence should try variety of pedagogical practices, wherein they are able to employ 'variability' and 'flexibility' in delivering teaching materials to students [2]. This means that teachers should be able to adopt and create the right or appropriate learning environment that would motivate their students to learn.

Teachers must devise ways to draw their students' attention and to seek means to improve their teaching practice. Adopting and intensifying the use of computer-based pedagogical practice is proven to improve or enhance the delivery of learning to students [27]. Use of technology in teaching provides a more interesting learning environment while reducing the required delivery time of teaching materials. Fletcher investigated the use of videodisc instruction in 6 studies as applied in higher education and found that through computer-based instruction, it was possible to have an average time reduction of 31% in the delivery of teaching materials [35].

Positive effects of CBI on learning however are claimed to be limited. Such limitation could either be in time or in space. Limitation in time of CBI's effect could be seen with the fact that CBI is usually felt at latter rather than earlier periods of teaching [36]. Likewise, with respect to space, effects of CBI would tend to vary on samples taken. For instance, in a study by Skinner [37], it was found that low achieving students benefited at greater extent from CBI than did high achievers.

Using computer technology in teaching however has been generally proven as a source of intrinsic motivation for learners [26,27,38-40]. Ryan and Deci noted the seeming advantages of intrinsic motivation over extrinsic motivation. Following that of Determination theory accordingly, critical distinction can be made between "behaviors that are volitional and accompanied by the experience of freedom and autonomy—those that emanate from one's sense of self" or those borne out of intrinsic motivation, from "those that are accompanied by the experience of pressure and control and are not representative of one's self" or those that are borne by extrinsic motivation [8].

From the point of view of Ryan and Deci, students seem to respond to extrinsically motivated actions such as rewards and punishments, "with *resentment*, *resistance*, and *disinterest*" compared to "*attitude of willingness*" with intrinsic drive for value or utility of task at hand. This makes extrinsic motivation problematic and only serves to motivate on a short-run basis [8].

Research Method

This research overall has been qualitative in nature. It uses both descriptive and analytical approaches in dealing with the topic on hand. The strength of a highly descriptive and analytical research has been its ability to demonstrate the fullness of experience in a more meaningful and comprehensive fashion [41]. Descriptive approach on one hand, allows description of present conditions that surround and define the specific problems in the study [42]. Analytical approach on the other hand allows evaluation of information related to the research topic and the findings that provide answers to research questions [42,43]. Both approaches are expected to produce elaborative and more profound discussions on the statements and arguments that surround the main problems in this study.

Triangulation of research methods

In this study, *triangulation* is used to combine two methodological approaches, namely, *case study approach* and *grounded theory approach*. In research, triangulation involves using two research approaches to strengthen validity of the findings in the study [44,45]. For Yin [46], conducting a case study on the one hand, is like conducting investigation on a specific phenomenon in 'a real-life' situation. Grounded theory, on the other hand, is used to solidify findings from case study, by deriving essential information from experiences of participants in the study [47].

Through case study, the researchers have gone through the experiences of student-participants in the study. Through grounded theory, the researchers generated an explanation (theoretical) on the process, action or interaction in the experiences of the students on whether CBI has indeed helped in motivating them to learn and put into practice what they were taught in class.

The two approaches were applied in three consecutive years for three respective samples. First, case study and grounded theory approaches were employed during school year 2012-13 wherein through the use of questionnaires, specific situations describing the learning experiences of SDCA students relating to the use and non-use of PP in class discussion were explored [48]. Then, a follow up study was done the following school year 2013-14 using the grounded theory approach to determine whether, grounded with the experiences of a number of SDCA students, similar conditions can be established and explained.

Another follow up study was done using grounded theory approach during the school year 2014-15, likewise with SDCA students to see which of their learning experiences they prefer: the one with the use of PP or the one without the use of PP. A modified Likert Scale is used in the survey questionnaires in this part of the research to determine whether the students agree or not agree that the use of CBI can lead to attention, relevance, confidence and satisfaction on the part of the students [49].

Sampling used

In both the case study and grounded theory approaches, *purposive time sampling* was used, to choose student-respondents which comprise the main samples in the case study. Purposive time sampling is used when small number of cases is chosen for observation in separate periods of time, because the cases are rich in supplying information for research questions [50]. The smallness of samples in this case is

compensated by repetition of experiments in separate periods of time [50,51].

The same samples of students for different periods of time used in the conduct of experiment are of the same course, specialization and characteristics. Students are neither high nor low performers. They are considered average performers as shown in their scholastic records.

Qualitative research, within the context of both case study and grounded theory, was more appropriate for this research as the direction was more of outcome-based and deeply descriptive. It seeks understanding, development and applicability of theory based on a specific conditions and phenomena, which in this study was about whether CBI or not has indeed helped in motivating the students to learn and put into practice what they were taught in class [41,52].

Data collection

Case study: For case study, the data which for the most part primary data, were derived from survey questions, first administered to six respondents, who were students of the researcher/s, during school year 2012-13. Two sets of questionnaires containing open ended questions were used to test the hypothesis whether or not use of computer facilities, i.e. PowerPoint, helped in motivating the SDCA students in their learning and in putting into practice what they were taught in classroom discussions. One set of questionnaires was administered with a lesson on a topic discussed with PP presentation, while the other set of questionnaires was conducted with a lesson on a topic discussed without PP presentation.

The two sets of questionnaires contained the same questions such as for instance, whether the sample students preferred the use of PowerPoint in the discussion or not, or whether they found the use of PP interesting or not. The questionnaires also contained questions which allowed the author to determine whether the students were able to identify or not the problem and the resolution/s of a problem in a case lesson that they were asked to read and analyze before they answered the questionnaires. Likewise, the questionnaires contained questions as to whether or not, through their answers, they were able to relevantly apply in their own lives, either at present or in the future, what they understood in the case they read.

The two sets of questionnaires were administered separately in two occasions (Figure 2). In one occasion, the students were asked to read and analyze a case-lesson based on a topic discussed using PP. Then they were provided the questionnaires to answer. The questionnaires served to determine, firstly, whether or not the use of PP: 1) caught the students' attention, 2) boosted their confidence and, 3) drew from them learning satisfaction. Secondly, the questionnaires served to determine whether or not the students learned from the discussion using PP, by understanding the case, and by being able to apply what they learned in the discussion in relation to the case.

In another occasion, the students were asked to read and analyze another case-lesson based on a topic discussed without the use of PP. Then they were provided the questionnaires to answer. The questionnaires served to determine overall, whether without the use of PP, the students noticed the disadvantages of not using PP in teaching and that they still preferred the use of PP in classroom discussion.

Each of the two topics from which the case was to be analyzed was taught the previous week, prior to the administering of questionnaires, either with or without the use of PowerPoint presentation. In turn, each of the two sets of questionnaires was answered by the student-respondents to be followed by clarificatory questions, which were done by the researcher/s and hence the professor/s in case of parts of students' responses that were not stated clearly and needed clarification [53].

Grounded theory: For grounded theory, the researchers have gone through experiences of the respondents, who were their students using survey through questionnaires. The survey was conducted, one, during school year 2012-2013, and two, as follow-ups during school years 2013-2014 and 2014-2015. Six students were involved in the survey through questionnaires, during school year 2012-2013, four during school year 2013-2014 and 27 during school year 2014-2015, to see whether or not they prefer CBI or Non-CBI.

Through questionnaires, questions were asked centering both on the positive and negative effects of using PowerPoint and then on the negative effects. After gathering information on the positive and negative effects, the research adopted *open coding procedure*, whereby the researcher/s identified conditional categories for each of the positive and negative effects of CBI.

Figure 3 shows that through *axial coding procedure*, the researcher/s identified commonalities for each of those categories. For
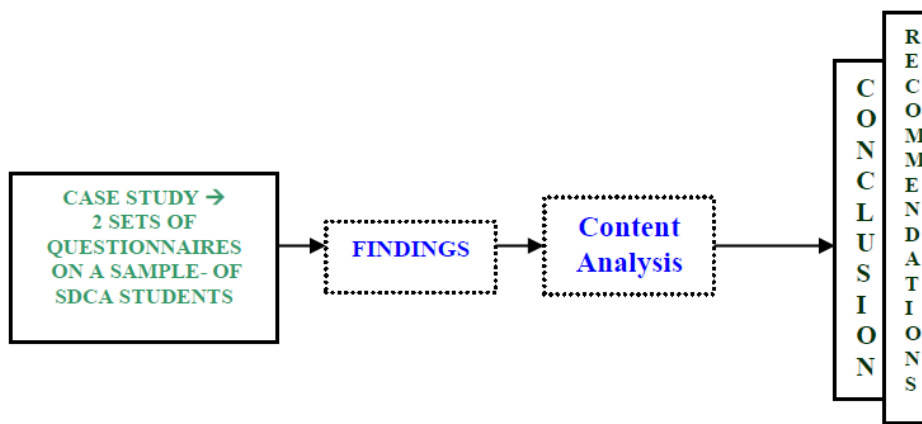

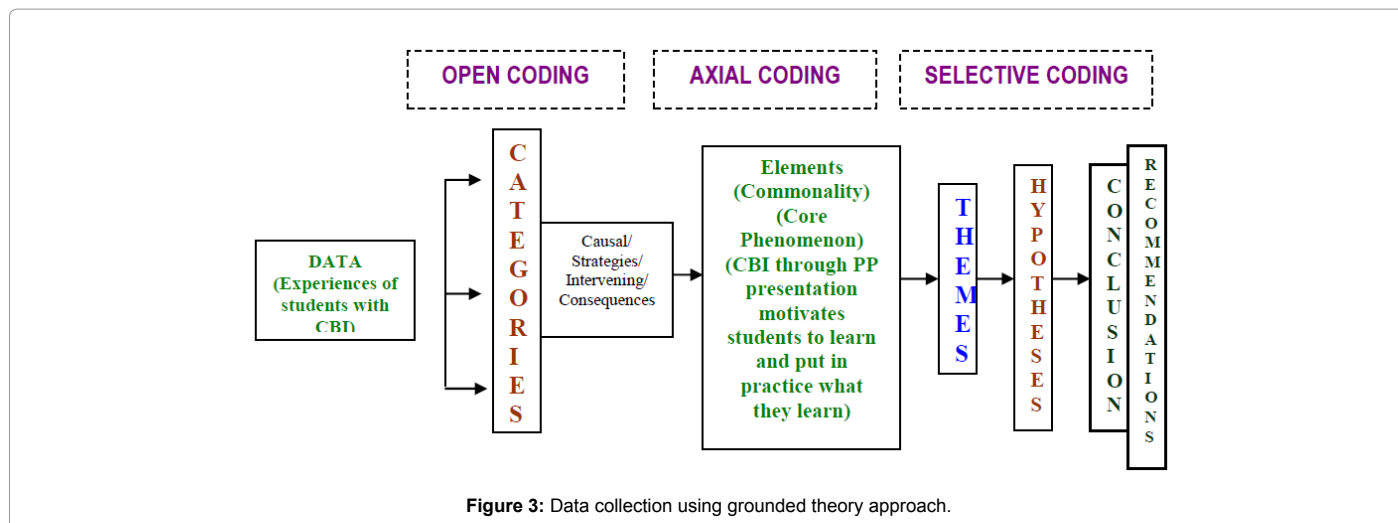**Figure 2:** Data collection using case study approach.

Figure 3: Data collection using grounded theory approach.

each of the negative and positive effects, an individual common view was then derived by the researcher/s. Finally through *selective coding procedure*, such commonality was later used in coming up with themes or hypotheses, from which, a general theoretical explanation and conclusion was formed. An illustration on how such data collection, treatment and analysis were done in this research is shown in Figure 3 below.

The responses to the two sets of questions in the case study's and ground theory's questionnaires were expected to show that:

1) With the use of PowerPoint presentation:

a) CBI has caught the students' attention;

b) CBI has boosted their confidence;

c) CBI has made the class discussion satisfying and interesting for them, and;

d) CBI has relevantly helped the students to put into practice what they learned inside the classroom.

2) Without the use of PowerPoint presentation:

a) The students would mention its disadvantages and would still prefer the use of PowerPoint presentation in class.

Findings and Analysis

Survey: 2012-2013

Does CBI or pedagogical practice of using computer facilities (i.e. PowerPoint or PP) help in motivating SDCA students to learn in terms of catching their attention?

Using content analysis, and going over the answers in Table 1, of the 2012-2013 SDCA 3rd year college students on questionnaires on a topic whereby the researchers/teachers used PowerPoint presentation, 4 out of 6 students preferred that such mode of teaching be adopted again. Their reasons suggested that overall PowerPoint presentation allowed them to follow and easily remember things that were discussed in class because either the contents of such presentation contained "colourful" visuals combined with texts that were easily "readable" and/or that these provided them straightforward summary discussion of their lessons [54].

On the other hand, the main reasons of the two students– from experience, why they expressed non-preference in the use of PP were: 1) for the first student, she cannot cope up with the tempo of PP presentation; and 2) for the second student, he preferred that the professor speak closely in front of the class without using any computer facilities.

For responses on questionnaires on topic which was previously discussed without PP, 4 out of 6 students still preferred that discussion be done with PP. Their main reason was that – PP presentation would have allowed them to remember what was discussed in class because PP presentation is more detailed. Without PP, they said that they tended to easily forget what were discussed in class. As for the students who responded, why they did not prefer the use of PP presentation in class, their reasons were the same as of the above that, from experience: 1) for the first student, she cannot cope up with the pace of PP presentation; and 2) for the second student, he preferred that the professor speak closely/directly in front of the class without using any computer facilities.

Overall, it will be observed here that in the two topics discussed, both with or without the use of PP presentation, most of the students would still prefer the use of PowerPoint presentation in class mainly because PP provided them colourful visuals, and easily readable teaching materials, which in turn, caught their attention and motivated them to follow the discussion and effectively learn.

Does CBI, using of computer facilities relevantly help SDCA students in effectively understanding and putting into practice what they learn in school in their own specific situations at present or in the future?

Using content analysis and going over the results in Table 2, of the responses and the scores for each specific students' response, it will be observed that the average score of students in terms of how they were able to identify: the problem; and the resolution/s of the problem, in the cases that they were assigned to read and analyze, was relatively higher in the case where the topic was discussed using PP (8.9) compared to the average score of the students in the case where the topic was discussed without using PP (7.3). Also, it will be observed that the average score of students in terms of how they were able to apply what they understood in the case they were assigned to read, was relatively higher on the topic whereby PP was used in discussion (7.3), compared to the average score they got on the topic whereby topic was discussed without the use of PP (7.0).

	Topic Discussed with PowerPoint (PP)	Topic Discussed without PP
No. of Students who Preferred the use of PP	4 Out of 6	4 Out of 6
No. of students who do not prefer the use of PP	2 Out of 6	2 Out of 6
Main reason/s for preference of Use of PP	-" [With PP], We can follow what is discussed by the professor and [PP presentation] helps us in remembering our lessons… it has a colorful visual." - "The professor can easily discuss the lesson" - "[PP] contains summary of the discussion." -"The discussion is more readable."	-"Using PP, we [will] remember the case study." -"We can easily understand what the professor [is] discussing." - "it [the PP] is so detailed. -"Without PP, I can easily forget the topic."
Main reason/s for not preferring the Use of PP	"We cannot follow [even] the PowerPoint [presentation]." - *It is easier to understand the lesson when the professor discusses [directly] in front of us."*	"There is no[t] [enough] time to follow [the] presentation…" *"I get the lesson better without PP."*

Table 1: No. of students who preferred and not preferred the use of PP.

	Topic Discussed with Power Point (PP)	Topic Discussed without PP
Average score* (from 1-10) of students in terms of how they were able to identify the problem and the resolution/s of the problem in the case-lesson they read	8.9	7.3
Average score* (from 1-10) of students in terms of how they were able to apply what they understood in the case-lesson they read to their own lives, either at present or in the future	7.3	7.0

Table 2: Average scores of students on how they were able to apply what they learned in their own lives.

	Topic Discussed with PowerPoint (PP)	Topic Discussed without PP
No. of students who found it easier to understand learning	4 Out of 6	4 Out of 6
No. of students who did not find it easier to understand learning	2 Out of 6	2 Out of 6
Main reason/s why it was easier to understand learning	-"can follow what our professor is discussing." - "the professor can easily discuss the lesson" - "it [the discussion] was easier to understand for us students" -"it [PP] makes the discussion more clear and understandable"	- "It makes you easier to understand what is discussed." - "we can easily understand what the professor is discussing." -"I was able to understand the case." -"It is more understandable."
Main reason/s why it was not easy to understand learning	-"it causes a lot of time." -*"It is easier to understand the lesson when the professor discusses [directly] in front of us."*	- "There is no time to follow [the discussion]." -*"It is easier to get the lesson if the professor discusses in front of us."*

Table 3: Number of students who found or did not find it easier to understand what they learned.

Does CBI or pedagogical practice of using computer facilities (i.e. PowerPoint or PP) help in motivating SDCA students to learn in terms of boosting their confidence? (Did they find it easier to understand learning materials with the use of PP?)

Using content analysis, and going over the responses of the students on questionnaires both for topics previously discussed with or without PP presentation in Table 3, it will be observed that the same majority of student-respondents, that is, 4 out of 6 of them, preferred the use PP in class discussion. The main reasons that students gave for preferring the use of PP were that from their experience: 1) discussions were made clearer, and; 2) lessons were made easier to understand (than without the use of PP). All these in turn have boosted their confidence and gave them motivation to learn, knowing that they can easily follow and cope up with the discussion. On the other hand, those who did not prefer the use of PP, i.e., 2 out of the 6 student-respondents, pointed out that either they cannot cope up with the tempo of presentation using PP, or that they would prefer that the professor discussed closely/directly the lesson "in front of the class".

Does CBI or pedagogical practice of using computer facilities (i.e. PowerPoint or PP) help in motivating SDCA students to learn in terms of expressed satisfaction, through interest and enthusiasm they experienced? (Did they find it interesting to understand learning materials with the use of PP)

Using content analysis and going over the responses of the students in Table 4, it will be observed that all students agreed that presentation using PP was more interesting and that they derived more satisfaction to it, than without using it. The main reasons were because from experience: 1) PP presentation was clearer and more understandable; 2) all details the students needed were in the PP; and 3) while reading the presentation, they can follow through it. Moreover, it will be noted that the two students who preferred not using PP were also in agreement that the use of PP in class discussion presented somewhat interesting impressions, that is: 1) PP presentation was more "techy"; and 2) the teaching was only made easier on the part of the professor. The term "techy" here could be very well applied to any individual, organization, or even situation that somehow uses, for his or its own benefit and for purposes of "display" only, computer and other related gadgets. This requires separate discussion.

Survey: 2013-2014

From the 4 students who were subject to follow-up questions during the school year 2013-2014, the following categorical explanations as to the positive effects of using CBI inside the classroom were the following:

A. "**Easier to follow line of ideas through the use of CBI**" - Power Point Presentation helped students in grasping the meaning of concepts or ideas due to greater visibility and more systematic presentation of topics than in the case when not using it. Attention of students was easily glued onto the discussion. This helped to motivate intrinsically the students since they found it easier to grasp concepts in class.

	Topic Discussed with PowerPoint (PP)	Topic Discussed without PP
No. of students who found the use of PP interesting	6 Out of 6	6 Out of 6
No. of students who did not find the use of PP interesting	6 Out of 6	6 Out of 6
Reasons of students why they found the use of PP interesting	"You can read what the professor is discussing; it's more interesting because while you're reading, you can think any idea on that topic." -"Because of presentation [itself]." -"All the details that we needed [were] in it." -"It doesn't make the discussion interesting, but it makes the discussion more clear and understandable." -"It is more 'techy'." -*"it makes teaching easier."*	-"Interesting because, while the professor discusses the topic, you can read it again and *you can understand what is discussed.*" -"We can easily understand what the professor is discussing." -"it is interesting how the topics can be summarized without sacrificing the thoughts of the topic." -"PP doesn't make it interesting, but more understandable." -"It is more "techy." -*"Only because it makes teaching easier."*
Reason/s of students why they did not find the use of PP interesting	---	---

Table 4: Average scores of students who found or did not find the use of PP interesting.

	Slightly Agree	Somewhat Agree	Agree	Mostly Agree	Completely Agree	Slightly Disagree	Some-what Disagree	Disagree	Mostly Disagree	Completely Disagree
1. The use of PowerPoint made me more ATTENTIVE in class	3	1	6	6	7					
2. The lessons were made more RELEVANT in my own situation through the use of PowerPoint Presentation	3	3	10	3	4					
3. The use of PowerPoint made me more CONFIDENT in class	6	2	8	2	5					
4. The use of PowerPoint made me more interested and gave me SATISFACTION in listening to discussion	1	4	6	4	8					

Table 5: Results of survey using modified likert scale on SDCA students: 2014-2015.

B.   "**Accessibility of students to class notes**" – Class notes were handier and readily more available when Power Point was used than when not used inside the classroom for teaching. Students found their lessons more relevant as they were able to easily follow discussions. Likewise they were more confident that they were able to follow easily the lessons just as they were able to also easily take down notes.

C.   "**Questions can easily be raised up by students**" – questions can be raised by student easily since, they did not have to go back and cull their memory, they just had to look onto the presentation and they already knew what to ask from the professor. This revealed why they were very much interested in the discussion and how they expressed their real satisfaction on the discussions using CBI.

Survey: 2014-2015

For survey conducted during school year 2014-2015 using modified Likert Scale, all students expressed positive responses as to whether they agree or not that PP: 1) made them more attentive in class; 2) made the lessons more relevant in their own situations in life; 3) made them more confident in class; and 4) gave them more satisfaction in listening to the discussion.

Accordingly, the reason why they prefer the use of PP in class discussion was that they found it (Table 5):

"visual", "attractive", "entertaining", "objective", "summarized", "readable", "time saver", "there's emphasis", "easier", "lively", "observable", "animated", "with different styles/styles", "facts based", "visual and photo effects", "themed, presentable", "video inclusion", "satisfying", "accurate", and "easily understood".

Conclusion and Recommendation

Conclusion

Based on the findings and observations in the study, it can be said that indeed, through highly illustrative and readily applicable pedagogical practices using computer technology particularly PowerPoint application inside the classroom, teachers can: 1) intrinsically motivate and 2) help their students put into practice what they are taught in school. Intrinsic motivation, in this study, was observed to be realized particularly in the case of the SDCA college students, who were subject to the study of the authors, who at the same time was their professors.

Computer-based instruction (CBI) effectively resulted in intrinsic motivation following ARCS (Attention, Relevance, Confidence, Satisfaction) principles, as proven on the responses and experiences of student-respondents in the study. Particularly it was seen that CBI was able to help in intrinsically motivating the SDCA students to learn in terms of catching the attention with at least the majority of the students. Their attention was drawn with motivation to learning because using PP, they were able to follow and easily remember things that were discussed in class, through "colorful" visuals combined with texts that were easily "readable" in the presentation, providing them straightforward summary discussion of their lessons.

Likewise, based on the students' responses and experiences, CBI helped them in effectively understanding and relevantly putting into practice what they learned in discussion of a topic using PP as evidenced by their higher scores in reading and studying a case, which required them to: 1) identify the problems as well as resolution to the problems, and; 2) apply what they understood in the case based on the topic that

was discussed using PP. Also, their easy access to notes facilitated their ability to apply in real setting what they learned in school.

CBI at the same time was able to help in intrinsically motivating the students because their confidence was boosted with easier understanding of their lessons. Students indicated in the survey that they preferred the use of PP because discussions were made clearer and hence easier to learn, which boosted their confidence. Also, CBI was able to help in intrinsically motivating SDCA students to learn in terms of expressed satisfaction, through interest and enthusiasm that they indicated in their responses and experiences in the study. From their responses and experiences, students indicated that: 1) PP presentation was made clearer and more understandable; 2) all details the students needed were in the PP; and 3) while reading the presentation, they can follow through it.

For survey conducted during school year 2014-2015 using modified Likert Scale, all students agreed that PP: 1) made them more attentive in class; 2) made the lessons more relevant in their own situations in life; 3) made them more confident in class; 4) made them more interested and gave satisfaction in listening to the discussion.

It is worth-noting here however, that based on overall findings, there were also two students who expressed non-preference in the use of PP in class discussion. Their reasons were mainly because: one of them was not able with the tempo of the presentation, while the other believed that he would have understood better the lesson if the professor/s would have discussed closely and directly in front of the class. Caution has to be put hence in the use of computer technology in class. Lecturing using computer does not disregard the specific individual needs of students in class. Teachers should also maintain close classroom connections with students [55]. Each student cannot be left behind and each one's needs should be attended.

Recommendation/s

As for all these findings, it can then be recommended that SDCA further enhance the use of computer-based instruction inside its campus. Firstly, SDCA, can install more PowerPoint facilities and equip the existing classrooms without such facilities, or even the ones that are currently being constructed, for the future benefit for of the students in terms of highly motivated, fully engaged learning, and hence complete human intellectual development. Secondly, the school can also intensify the conduct of training for use of such facilities among teaching personnel. Finally, the school can further revolutionize its CBI with the adoption of currently available teaching software or application not only for use in college but also in grade school and high school.

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