IMPACT OF CASE-BASED LEARNING (CBL) ON STUDENTS' LEARNING

Mr. Kinley Wangchuk

Lecturer in Accounting and Auditing

Gedu College of Business Studies, Royal University of Bhutan

Email: kinleywangchuk.gcbs@rub.edu.bt | Phone: 17396435

Mrs. Tshering Lhamo

Lecturer in HR

Gedu College of Business Studies, Royal University of Bhutan

Email: tsheringlhamo.gcbs@rub.edu.bt | Phone: 17503638

ABSTRACT

Case-based learning is one of the popular active, student-centered teaching-learning strategies and has become the answer for growing criticism and awareness of the huge gap between theory and practice in all sorts of educational settings. It is a pedagogy that intends to move a step ahead of just implanting information in students' minds thereby reversing the contemporary education approach to learning by swapping the role of teachers and learners. CBL as a student-centered pedagogy demands students' active involvement in the teaching-learning process and forces the learners to engage in self-directed learning.

Scholars argue that many studies have been carried out to evaluate small-group CBL but there is paucity of researches that studied the benefits of CBL involving larger group of learners. Thus, this study aimed at understanding the impact of CBL on students' learning, from the students' perspective, amongst the RUB Colleges. Thus, based on thorough literature review, a survey questionnaire was developed. The data was categorized using factor analysis based on the data from six RUB colleges.

An analysis of data gathered from 134 respondents consisting of 74 male and 60 female from 6 different colleges under RUB colleges, viz; GCBS, JNEC, CLCS, Sherubtse, CNR and PCE showed that students have a positive experience of leanring under CBL method as opposed to traditional lecturing method. Very specifically, students associated CBL with self-regulated learning which compels students to undertake more independent learning through exploration of various learning platforms and materials. Further, results show that CBL helps the students in developing soft skills like presentation skills, confidence, critical thinking and life skills.

Given the inherent nature of CBL that focusses on the learners, results indicated that learners experience a greater sense of participation in the learning process along with better understanding of the concepts. Additionally, it was also established that CBL helps the students with better ability to interconnect and integrate different concepts, even across modules.

However, RUB colleges seem to be relying more of foreign cases for the purpose of using CBL. Thus, though the study strongly suggests continuing to adopt CBL as the primary teaching- learning pedagogy, it also recommends using more Bhutanese born cases for the ease of understanding of the learners and also for greater ability to relate to the ground realities.

Introduction

There is growing concerns over the gap between what is learnt in the classrooms and what is demanded at the workplaces. One way to bridge the gap is by way of infusing the workplace demanded competencies in the teaching-learning processes. The conventional way of teaching is driven by one-way traffic of flow of information from the teacher to the students (Giacalone, 2016). While the conventional, constructivist learning theories view learning as an active phenomenon that requires the students or the learners to create their own knowledge by integrating previous knowledge with the real-world situations (Gangwar, 2017). This requires the education settings to emphasize on innovative teaching-learning pedagogies like inquiry-based learning, stories-telling method, case-based learning, project-based learning and the likes which allows learners to see a connection between the learnt concepts and the real-world situations (Giacalone, 2016; Gangwar, 2017).

Case-based teaching/learning is one of the popular active, student-centered teaching-learning strategies and has become the answer for growing criticism and awareness of the huge gap between theory and practice in all sorts of educational settings (Gravett, Beer, Odendaal-Kroon & Merseth, 2017). The history of case-based teaching dates back to 1870s pioneered by the Harvard Law School and then Harvard Graduate School of Business followed the suit some 50 years later. It has now become a widely accepted tool for effective learning and thereafter, it has been used and deployed thoroughly in all sorts of education and learning set-ups (Bhardwaj et al., 2015).

"A case study is defined as a story with a hidden message or a narrative that describes an actual or realistic situation in which an individual or a group has to make a decision or solve problems" (Habasisa & Hlalele, 2014, p. 1001). Case-based learning (CBL) is a pedagogy that intends to move a step ahead of just implanting the information in students' minds. It has reversed the conventional education approach to learning by swapping the role of teachers and learners (Khan et al., 2015). CBL as a student-centered pedagogy demands students' active involvement in the process of learning and forces the learners to engage in self-directed learning (Kaur, Rehncy, Kahal, Singh, Sharma, Matreja & Grewal, 2020). It uses a case/case study as the central subject, based on which learners make enquiries, identify the issues and then correlate the concepts and theories with the issues given in the case (Giacalone, 2016). Thus, CBL brings out active participation from students. This heightens the learners' capability to think, analyze critically and learn to apply theoretical concepts to the case. Therefore, CBL is known for encouraging learners to learn independently and get a deeper understanding of the topics (Kaur, et al., 2020).

Studies have found that students accredit CBL for its ability to stimulate learning, retain information for a longer period, ease of recalling, improve decision-making and problem-solving abilities and promote reflection along with improving their confidence in their ability to do the job in a real-work settings (Bano, Arshad, Khan, & Safdar, 2015). However, on the hindsight, an unsatisfactory way of engaging the learners by the teachers in a case-based teaching-learning situation has been established

to lead to higher rate of absenteeism on the part of the learners (Khan, Tasawar, Khan, Qamar, & Saga 2018). To make the matters worse, majority of the educational institutes in Asia use cases written by scholars from advanced or developed economies, they become highly unsuitable for learners in developing economies like Bhutan (Pitt & Watson, 2011).

Scholars argue that many studies have been carried out to evaluate small-group CBL but there is paucity of researches that studied the benefits of CBL involving large group of leaners (Kaur, et al., 2020). Thus, this study aimed at understanding the impact of CBL on students' learning, from the students' perspective amongst the RUB Colleges.

this study is the first to determine the impact of case-based teaching on students' learning. As such, the study will contribute to broaden the knowledge base of using case method for teaching in a Bhutanese setting. Further, the study will be particularly relevant to Bhutan as a developing economy that is a huge consumer of foreign cases. The findings of the study will also benefit multiple stakeholders of tertiary education system, primarily the current and future students who will be entering the tertiary educational setting. The findings may also motivate the teaching fraternity to initiate writing Bhutanese cases.

Literature Review

The labour market has a soaring demand for executives or managers who are capable of articulating and defending their opinion, which implies the need to be able to think independently and promptly. The conventional lecture method has been criticized for causing stress and cognitive overload in students thereby resulting in poor critical thinking abilities and problem-solving skills (Atwa, Gauci-Mansour, Thomson & Hegazi, 2018). Scholars advocate that educators have role beyond simply imparting knowledge; helping in developing skills required at the workplace and face the realities of life better (Sheng, Wang, Hu, Ling & Chen, 2019). And researchers argue that cases are just the perfect means to practice these traits (Pitt & Watson, 2011). Hence, cases are now extensively used as the main teaching-learning pedagogy in various areas of education like history, management, chemistry, medicine, linguistics, law, political science, journalism, economics, engineering and health (Lee, Lee, Liu, Bonk & Magjuka, 2009; Sheng, et al., 2019) since its inception in1870s pioneered by the Harvard Law School and then Harvard Business school some 50 years later (Bhardwaj, Bhardwaj, Mahdi, Srivastava & Gupta, 2015; Gravett, Beer, Odendaal-Kroon & Merseth, 2017).

A case provides statements of circumstances, attitudes and practices of an organization; it could also include a historical account that enables the readers to understand the underlying dynamics of the present situation and its potential influence on the future better (Dunbar, Watson, & Boudreau, 2007; Habasisa & Hlalele, 2014). A case exposes learners to complex situations that requires a decision to be made. The situations can either be real based on past or present research or just realistic, and can be of varying levels of complexity (Giacalone, 2016).

CBL is a pedagogy that intends to move a step ahead of just implanting the information in students' minds. CBL entails describing a situation and getting the students to identify central issues and deliberate on potential solutions through class discussion (Dunbar, Watson, & Boudreau, 2007). Generally, a case would describe some challenges and problems, faced by an organization, which

needs to be resolved. CBL ensures application of knowledge and deployment of analytical skills to resolve complex, real-world scenarios in view of the given topic (Raza, Qazi & Umer, 2020; Giacalone, 2016). A good case gets the learners to move beyond the given facts and do a detailed situational analysis. Further, skilled case instructors guide the learners towards more profound considerations so that the most insightful ideas come from the students in the course of the discussion (Pitt & Watson, 2011). Moreover, teachers play an instrumental role of a facilitator as the teacher is responsible for choosing/assigning the cases and also for the subsequent discussion (Kaur, et al., 2020).

CBL has reversed the conventional education approach to learning by swapping the role of teachers and learners (Khan et al., 2015; Raza, Qazi & Umer, 2020). It is a student-centeric pedagogy which emphasizes the active lead taken by students in their own learning process. This implies that students are charged with the responsibility to construct their own knowledge rather than taking information passively (Wijnen, Loyens, Smeets, Kroeze, & Molen, 2017). Thus, case-based teaching integrates the principles of adult learning that provides autonomy to the learners for their own learning process (Khan et al., 2015).

Scholars are of the view that the ability to see the bigger picture faster and yanking out key elements for analysis to make a decision comes only through training, practicing, and practical experience. And this is exactly what CBL has to offer to its learners (Pitt & Watson, 2011). This could also be the answer for the claims of a theory-practice gap (Kinsella & Pitman, 2012). For example, in the case of clinical pharmacology, CBL has proven to have the ability to bring theory and practice closer (Hasamnis, Arya, & Patil, 2019; Atwa, et al., 2018).

Though preparing for a CBL session could be frustrating, annoying, and exhausting for both teachers (Bano, Arshad, Khan, & Safdar, 2015) and students it builds the traits of sensitivity and self-confidence (Pitt & Watson, 2011). Advocates of CBL claim that it allows active participation of the learners, enables them to think critically and offer opportunity for collaborative analysis besides being able to identify a range of alternatives to any kind of issues and challenges (Austin & Packard, 2009; Kilbane, Freire, Young, Hong, & Pryce, 2014). Studies show that students find learning under CBL to be better than lecture-based as it improves the learning of the concepts and reinforces the realistic aspects of the topics discussed (Atwa, et al., 2018). CBL promotes active participation of the students, increases their attention and motivation, increases student's learning via improved ability to analyze and integrate the materials (Kaur, et al., 2020; Raza, Qazi & Umer, 2020; Atwa, et al., 2018).

Extensive review of literature has been indicative of CBL to promote students' learning (Sheng, et al., 2019). From the educational theory perspective, effective learning strategies consist of deep processing, which refers to ability to integrate various topics, and self-regulation, which refers to students taking control of their own learning process. CBL is believed to have the ability to bring these effective learning strategies to the forefront (Wijnen, Loyens, Smeets, Kroeze, & Molen, 2017; Gangwar, 2017). CBL requires students to look for literature themselves so as to address the issues outlined in the case. Further, as the tutor assumes the role of a facilitator like asking in-depth questions, the students are held responsible for their own learning, rendering them as self-regulated learners (Wijnen, et al., 2017). A study on introduction of CBL to students established that the interest

of the students to learn the subject increased by more than 50 percent with the introduction of CBL. The students reported that CBL provoked self-regulated learning through reading more books, discussing in groups, and using resources such Google, Wikipedia and YouTube to better understand the cases (Grover, Garg, & Sood, 2020; Atwa, et al., 2018). These elements have been identified to lead to greater sense of satisfaction for the students (Curran, Sharpe, Forristall, & Flynn, 2008; Srinivasan, Wilkes, Stevenson, Nguyen, & Slavin, 2007). Therefore, it explains the rationale behind identifying CBL as a principal tool in advocating for social work (Kilbane et al., 2014). Hence, Khan et al. has rightly pointed, "The romance of learning and excitement of discovery, is provided by the problem scenario" (2015, p. 416).

For instance, a study conducted at Army Medical College, Rawalpindi in Pakistan reported that there exists a general consensus from the learners' side that they perceive CBL as interesting and motivating. Moreover, the study reported that though no significant difference with regards to learners' ability to answer the questions of remembering nature irrespective of the teaching pedagogy adopted was reported, a significant difference was observed on analytical and integrated questions amongst the learners under CBL (Khan et al., 2015; Gravett et al., 2017). Additionally, a study by Kaur, et al., (2020) also concluded that learners under both CBL and traditional lecture-based learning perform equally well on standardized tests, however, students under CBL enjoy the learning process more than the latter (Hasamnis, Arya, & Patil, 2019). But the overall knowledge gained by learners under different systems of learning concluded that CBL resulted in significant gain in overall knowledge (Grover, Garg, & Sood, 2020). Similar findings were reported by many other studies on this topic (Bhardwaj et al. 2015; Bano et al., 2015). The attendance of the students was also found to be better under CBL as opposed to lecture method. This implies that the students are more motivated and interested to learn under CBL system (Kaur, et al., 2020; Hahn, 2018).

CBL often requires students to work in teams, which can help in developing interpersonal skills and team-player skills in addition in heightening the ability of the students to communicate about a given topic (Giacalone, 2016). Moreover, while studying the impact of CBL on soft skills such as communication skills, problem solving ability and motivation to learn, in South Korea, Yoo and Park (2015 as cited in Raza, Qazi & Umer, 2020), confirmed that CBL is more effective in enhancing these soft skills than lecturing method. Due to the inherent participative nature of CBL, it provides a teacher with insights into students' ability to apply concepts to appropriate situation. This aids in improving their decision-making skills and prioritize elements besides improving the level of interaction between teachers and students (Raza, Qazi & Umer, 2020).

Student engagement, which refers to meta-construct constituted by behavioral, emotional and cognitive engagement, is acknowledged to be essential for higher academic achievement as it is believed to result in attentiveness and participation along with motivation to learn (Raza, Qazi & Umer, 2020). However, both attentiveness and are often seen as students' individual attributes, over looking the effect of teaching-learning structure. CBL as an active learning strategy has been concluded to stimulate goal-oriented behaviors and lead the students towards engaged behavior (Atwa, et al., 2018). Moreover, studies on impact of CBL concluded that the students reported higher degree of enjoyment and enhanced levels of understanding (Hasamnis, Arya, & Patil, 2019; Atwa, et al., 2018).

However, poor understanding on the part of the learners and inadequate knowledge and training on the part of teachers have been found to be contributing significantly to students' rate of absenteeism (Khan, Tasawar, Khan, Qamar, & Saga, 2018). This is an impact of the cases used by the educational institutes which were either ideas conceived or incidents that has happened in an advanced economical setting which is far from the reality of a developing economy thereby rendering the cases unsuitable for nations with emerging economies (Khan et al., 2018; Pitt & Watson, 2011). Additionally, CBL cannot be adopted as the sole teaching-learning pedagogy for students who are complete novices to the subject matter (Giacalone, 2016). Similar findings were reported in another study, wherein the students wanted lecturing method to precede CBL. Thus, scholars recommend both lecturing and CBL be used in succession for better understanding of the subject (Grover, Garg, & Sood, 2020).

Methodology:
The study adopted a quantitative approach and primarily relied on survey questionnaire that focused on objectively measuring and analysing the gathered data statistically, mathematically or numerically. Further, it had an exploratory element as it intended to explore the impact of CBL on students' learning process from different perspectives (Kowalczyk, 2018).

The data was collected through survey using a questionnaire. A structured questionnaire with a five point Likert scale ranging from strongly disagree to strongly agree was used to collect data. The questionnaire consisted of close-ended questions/statements developed and validated by peer review. It was further adapted to suit the Bhutanese context.

All the students of RUB colleges formed the population for this study. In line with the contention of Roscoe (1975), the questionnaire was distributed to 450 students under the nine RUB colleges as he contends that 30-500 respondents form a good size of sample for any sort of studies. Gender and semester representation was also attempted to be ensured. However, only 134 responded from six RUB colleges thereby leading to a response rate of around 30 percent only.

The 134 respondents consisted of 74 male and 60 female from 6 different colleges under RUB. GCBS and JNEC had the highest number of respondents with 30 respondents each, while CLCS had the least number of respondents with only 14 preceded by Sherubtse with 15 respondents. There were 17 respondents from CNR and 28 from PCE. The details are as shown in figure 1.
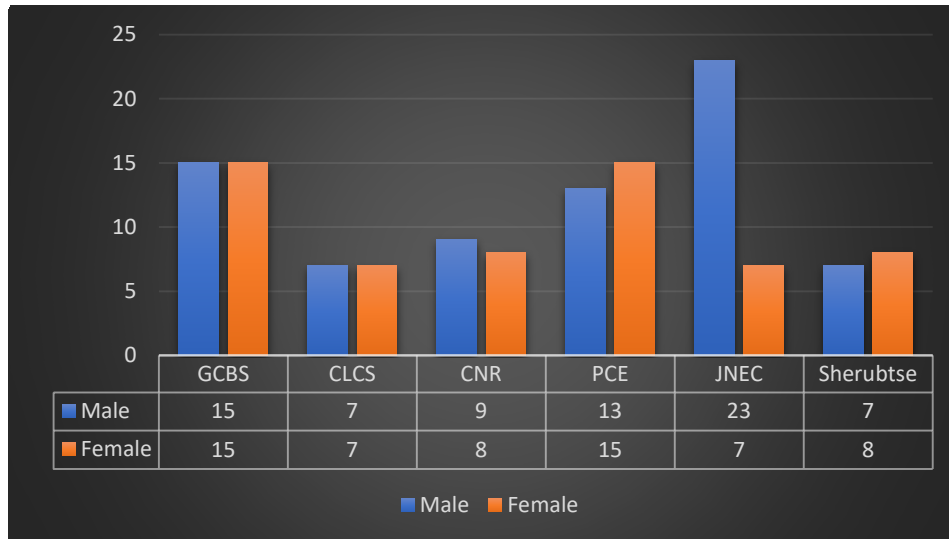
Figure 1: Respondents' distribution across college by gender

The mean age of the participants was 21.71 year with a standard deviation of 1.62. Since the 1st semester students were new to the concept of CBL and do not possess much familiarity with the CBL approach, they were not included as a part of the study population. Thus, data was gathered from 3rd, 5th and 7th semester students. There were 70 respondents from the 3rd semester, 46 from the 5th semester and 18 of the respondents were from the 7th semester. With only PCE and JNEC having 4-year programs, 17 of the 18 students from the 7th semester were from PCE and the remaining one being from JNEC. The detailed breakdown of the respondents from various RUB colleges are presented in figure 2.
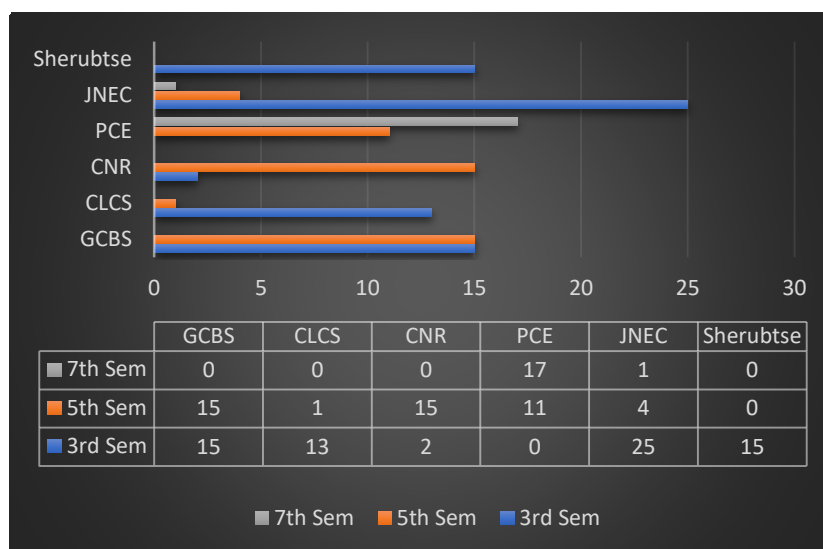
Figure 2: Respondents' distribution across college by semester of study

Results:

The questionnaire consisted of 27 items excluding the demographic items. Exploratory factor analysis was used to group the items together and form themes. The acceptable factor loading was set at 0.4 though the generally acceptable value is a minimum of 0.5 as the items with load of lesser than 0.5 were important. This returned six themes as shown in table 1. However, 3 items had to be dropped as

their loading was lesser than 0.4. So, a total of 24 items formed six different themes. The six dimensions were accordingly named; Self-Regulated Learning, Soft Skills, Conceptual Understanding, Participation, Bhutanese Cases and Knowledge Integration respectively.

Table 1: Rotated Component Matrix

	Component					
	1	2	3	4	5	6
Q1	0.767					
Q2	0.709					
Q3	0.642					
Q4	0.627					
Q5	0.505					
Q6	0.474	0.465				
Q7						
Q8						
Q9		0.712				
Q10		0.663				
Q11		0.652				0.432
Q12		0.646				
Q13		0.577				
Q14	0.409	0.508				
Q15		0.486				
Q16		0.437				
Q17						
Q18			0.836			
Q19			0.642			
Q20			0.62		0.413	
Q21				0.736		
Q22				0.689		
Q23			0.424	0.518		
Q24					0.817	
Q25					0.756	
Q26						0.773
Q27				0.443		0.495

Reliability:

To confirm the reliability of the research instrument, Cronbach's Alpha was computed. The generally acceptable Cronbach's Alpha value is said to be 0.7, atleast and the Cronbach's Alpha value for the

research instrument ranged from .69 to .782 for the six dimensions, constructed through factor analysis as depicted in table 2. The values, thus, indicate that the instrument is reliable to measure impact of CBL on students' learning.

Table 2: Reliability Analysis

Dimension	Cronbach's Alpha	Number of Items
Self-regulated Learning	0.82	6
Soft Skills	0.82	8
Conceptual Understanding	0.74	3
Participation	0.70	3
Bhutanese Cases	0.69	2
Integration	0.72	2

Perception on CBL

The overall perception of the students on CBL is that it is better than the traditional lecture method wherein around 80 percent of the students agreed with the statement "CBL is better than traditional lecturing method" out of which almost 48 percent strongly agreed with the statement. Only 0.5 percent of the respondents disagreed with the statement as exhibited in figure 3.
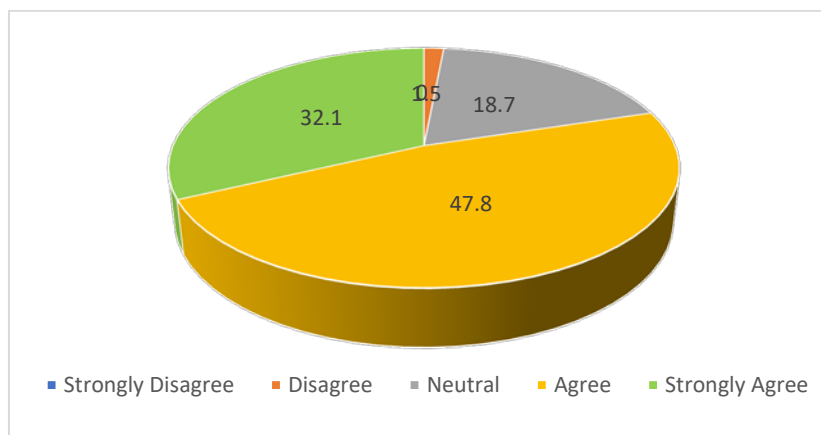
Figure 3: Level of agreement on "CBL is better than traditional lecturing method"

The mean value stood at 4.105 which is significant at p=0.05 as depicted in tables 3 and 4. The population mean was assumed to be 3 as the study used a five-point Likert scale in the research instrument.

Table 3: One-Sample Statistics on "CBL is better than traditional lecturing method"

	N	Mean	Std. Deviation	Std. Error Mean
CBL is better than traditional lecturing method	134	4.105	0.749	0.065

Table 4: One-Sample Test on "CBL is better than traditional lecturing method"

Test Value = 3

	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
					95% Confidence Interval of the Difference	
CBL is better than traditional lecturing method	17.078	133	0	1.10448	0.9766	1.2324

One-way ANOVA T-test was run to determine whether there existed any significant difference between the perception of students in various colleges on CBL being better than traditional lecturing method. The result showed no significant difference amongst students of various colleges under study at p>0.05 level for the conditions [F(5, 128)=0.563, p=0.729] as shown by table 5.

Table 5: ANOVA Test for "CBL is better than traditional lecture method"

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.603	5	0.321	0.563	0.729
Within Groups	72.935	128	0.570		
Total	74.537	133			

Self-regulated Learning:

In terms of self-regulated learning, which is one of the impacts of CBL on students' learning, the students under RUB colleges feel that CBL makes them engage in independent learning through exploration with an average mean value of 4.017. the mean score was the lowest for GCBS with 3.783 and highest for CLCS with 4.250 as presented in table 6. Further, one-way ANOVA test indicated that there is no significant difference in terms of self-regulated learning amongst the students of RUB colleges at p>0.05 level for the conditions [F(5, 128)=2.212, p=0.057]. The p-value being closer to 0.05 also implies that there is some possibility of some significant differences.

Table 6: Comparison of means on self-regulated learning by college

College	Mean	N	Std. Deviation
GCBS	3.783	30	0.547
CLCS	4.250	14	0.385
CNR	4.137	17	0.446
PCE	4.137	28	0.556
JNEC	3.944	30	0.609
Sherubtse	4.056	15	0.566
Total	4.017	134	0.552

Table 7: One-way ANOVA test for self-regulated learning by college

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.227	5	0.645	2.212	0.057
Within Groups	37.344	128	0.292		
Total	40.57	133			

The multiple comparison table presented in table 8 shows that there exists significant difference in self-regulated learning due to CBL amongst students of GCBS and CLCS, CNR and PCE. This implies that students of CLCS, CNR and PCE experience higher level of self-regulated learning as opposed to the students of GCBS.

Table 8: Multiple Comparison test on Self-regulated learning by College

(I) College	(J) College	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
GCBS	CLCS	-.467*	0.175	0.009	-0.813	-0.121
	CNR	-.354*	0.164	0.033	-0.678	-0.030
	PCE	-.354*	0.142	0.014	-0.634	-0.073
	JNEC	-0.161	0.139	0.250	-0.437	0.115
	Sherubtse	-0.272	0.171	0.113	-0.610	0.066
CLCS	GCBS	.467*	0.175	0.009	0.121	0.813
	CNR	0.113	0.195	0.564	-0.273	0.499
	PCE	0.113	0.177	0.524	-0.237	0.463
	JNEC	0.306	0.175	0.083	-0.040	0.652
	Sherubtse	0.194	0.201	0.335	-0.203	0.592
CNR	GCBS	.354*	0.164	0.033	0.030	0.678
	CLCS	-0.113	0.195	0.564	-0.499	0.273
	PCE	0.000	0.166	0.998	-0.328	0.329
	JNEC	0.193	0.164	0.242	-0.132	0.517
	Sherubtse	0.082	0.191	0.670	-0.297	0.460
PCE	GCBS	.354*	0.142	0.014	0.073	0.634
	CLCS	-0.113	0.177	0.524	-0.463	0.237
	CNR	0.000	0.166	0.998	-0.329	0.328
	JNEC	0.192	0.142	0.177	-0.088	0.473
	Sherubtse	0.081	0.173	0.639	-0.261	0.423
JNEC	GCBS	0.161	0.139	0.250	-0.115	0.437
	CLCS	-0.306	0.175	0.083	-0.652	0.040
	CNR	-0.193	0.164	0.242	-0.517	0.132
	PCE	-0.192	0.142	0.177	-0.473	0.088
	Sherubtse	-0.111	0.171	0.517	-0.449	0.227
Sherubtse	GCBS	0.272	0.171	0.113	-0.066	0.610
	CLCS	-0.194	0.201	0.335	-0.592	0.203
	CNR	-0.082	0.191	0.670	-0.460	0.297
	PCE	-0.081	0.173	0.639	-0.423	0.261
	JNEC	0.111	0.171	0.517	-0.227	0.449

However, no significant difference was observed amongst the students of various semester with regard to engagement in self-regulated learning as an impact of CBL at $p>0.05$ level for the conditions [$F_{(2, 131)}=1.982$, $p=0.142$].

Table 9: One-way ANOVA test for self-regulated learning by semester

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.191	2	0.596	1.982	0.142
Within Groups	39.379	131	0.301		
Total	40.57	133			

Soft Skills:

Soft skills as another area of development that occurred as a result of being exposed to CBL approach of teaching/learning has been experienced by the students of RUB colleges, in general. The students of CNR seem to be the ones to see improvement in their soft skills like presentation skills, confidence, critical thinking and life skills with a mean value of 4.169 while the students of Sherubtse have the lowest mean value of 3.825. However, the differences were found to be insignificant at p>0.05 for the conditions [F(5, 128)=1.100, p=0.363].

Table 10: Descriptives for Soft skills by college

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
GCBS	30	3.904	0.526	0.096	3.708	4.101
CLCS	14	4.071	0.263	0.070	3.920	4.223
CNR	17	4.169	0.328	0.079	4.001	4.338
PCE	28	3.996	0.458	0.087	3.818	4.173
JNEC	30	3.971	0.496	0.091	3.786	4.156
Sherubtse	15	3.825	0.656	0.169	3.462	4.188
Total	134	3.980	0.481	0.042	3.898	4.063

Table 11: One-way ANOVA for soft skills by college

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.267	5	0.253	1.1	0.363
Within Groups	29.478	128	0.23		
Total	30.745	133			

However, the level of soft skills development experienced by the students as per their semester of study showed a growing pattern with a greater number of students seeing an improvement in the soft skills with more exposure to CBL. The 5th semester students had the highest mean value of 4.1495 while the 3rd semester students had the lowest mean value of 3.8464 as shown in figure 4. And this difference between 3rd and 5th semester students was found to be significant at p>0.05 for the conditions [F(2, 131)=6.341, p=0.002] the details of which are presented in table 12. The multiple comparison table is given in annexure 1.
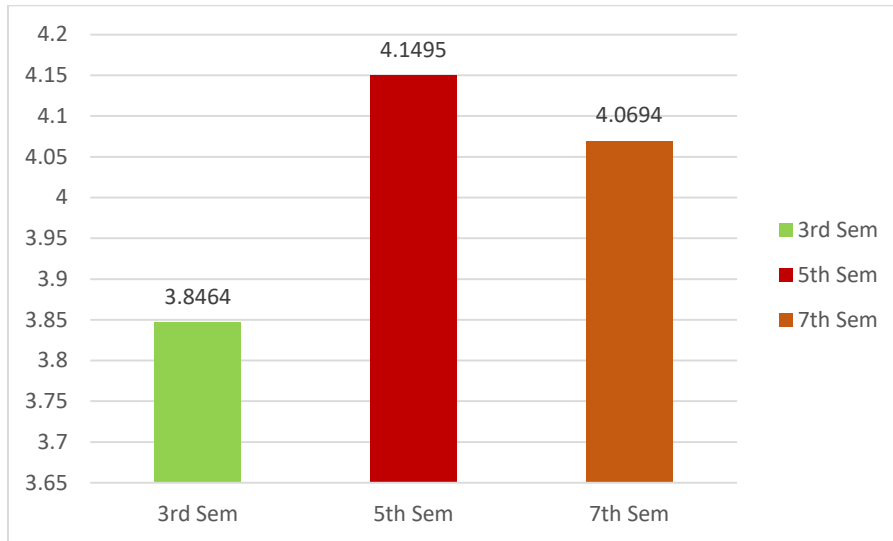
Figure 4: Mean scores on soft skills by semester

Table 12: One way ANOVA for Soft skills by semester

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.714	2	1.357	6.341	0.002
Within Groups	28.032	131	0.214		
Total	30.745	133			

Conceptual Understanding:

On the front of enhanced conceptual understanding as a result of learning under CBL all the students agree that this is occurring as the average mean stands at 3.9. However, the students of Sherubtse reported the highest mean of 4.222 while GCBS students reported the lowest mean value of 3.7222. One way ANOVA test did not show the differences to be significant at p>0.05 for the conditions [F(5, 128)=1.927, p=0.094] as depicted in table 13.
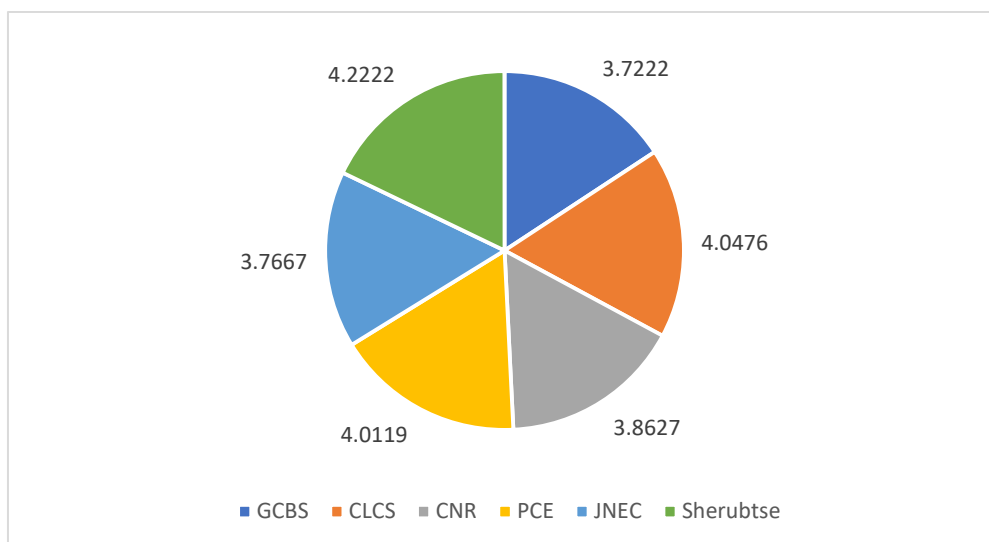

Figure 5: Mean scores on Conceptual understanding by college

Table 13: One way ANOVA for Conceptual understanding by college

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.718	5	0.744	1.927	0.094
Within Groups	49.4	128	0.386		
Total	53.118	133			

Similarly, significant difference on conceptual understanding was also observed between different groups of students by semester. As the students advanced into their study, a higher rate of conceptual understanding was reported with an increasing mean score from 3.7905 to 3.9638 and then to 4.1667 as one moves from the 3rd to 5th and then to the 7th semester. One-way ANOVA test showed that this difference is significant at $p>0.05$ for the conditions [$F(2, 131)=2.974$, $p=0.05$]

Table 14: Descriptive for conceptual understanding by semester

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
3rd	70	3.7905	0.61167	0.07311	3.6446	3.9363
5th	46	3.9638	0.66751	0.09842	3.7655	4.162
7th	18	4.1667	0.5393	0.12712	3.8985	4.4349
Total	134	3.9005	0.63197	0.05459	3.7925	4.0085

Table 15: One way ANOVA for conceptual understanding by semester

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.307	2	1.153	2.974	0.05
Within Groups	50.811	131	0.388		
Total	53.118	133			

Participation:

With regard to students' participation under the CBL approach to learning, CLCS had the highest mean score of 4.2619 followed by Sherubtse with 4.0222 but GCBS students reported the least mean value of 3.7667. These difference were found to be insignificant at $p>0.05$ for the conditions [$F(5, 128)=1.941$, $p=0.092$]. However, the multiple comparison test indicates that there is significant difference between GCBS and CLCS, CNR and PCE. The details are as shown in annexure 2.
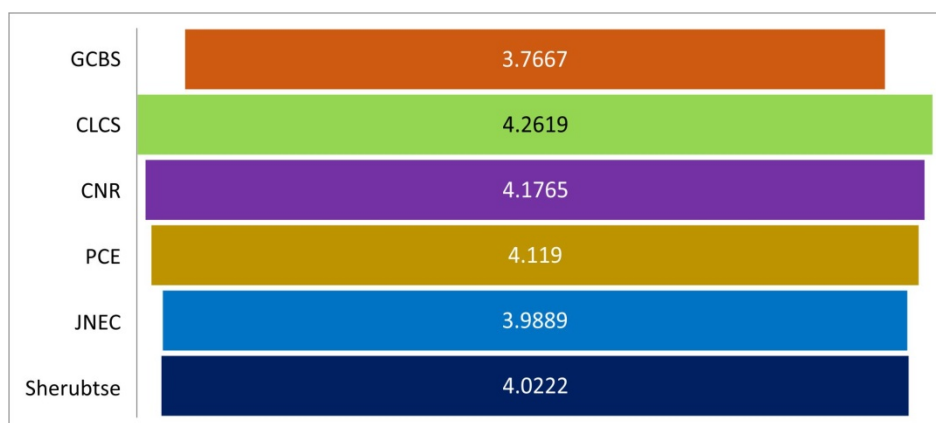

Figure 6: Mean scores on participation by college

Table 16: One way ANOVA for participation by college

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.464	5	0.693	1.941	0.092
Within Groups	45.691	128	0.357		
Total	49.155	133			

With regard to creating an enabling environment for students' participation through CBL, one way ANOVA test did not show any significant difference though the 7th semester students had the highest mean score of 4.185 followed by 5th semester students with 4.044 and then the 3rd semester students with 3.967.

Integration of Concepts:
Under the CBL approach to learning, overall, the students agree that it leads to better ability to integrate the concepts with an overall mean value of 3.8358. In general, the students of CLCS reported the highest level of agreement with a mean value of 4.1786 with very slight differences with CNR, PCE, JNEC and Sherubtse. But mean score of GCBS on this dimension was the lowest with a mean value of only 3 as shown in table.

Table 17: Descriptives on integration of concepts by college

					95% Confidence Interval for Mean	
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound
GCBS	30	3	0	0	3	3
CLCS	14	4.1786	0.46439	0.12411	3.9104	4.4467
CNR	17	4.0588	0.34832	0.08448	3.8797	4.2379
PCE	28	4.0893	0.54524	0.10304	3.8779	4.3007
JNEC	30	4.0667	0.53713	0.09807	3.8661	4.2672
Sherubtse	15	4	0.73193	0.18898	3.5947	4.4053
Total	134	3.8358	0.64824	0.056	3.7251	3.9466

Therefore, one way ANOVA test was run to determine the significance of the difference. The test indicated significant difference at $p>0.05$ for the conditions [$F(5, 128)=24.359$, $p=0.0$]. This indicates that there is significant difference in terms of ability to integrate the concepts of different modules through CBL system of learning between GCBS and the other 5 colleges. The details of the multiple comparison test is given in annexure 3.

Table 18: One way ANOVA for integration of concepts by college

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	27.25	5	5.45	24.359	0
Within Groups	28.638	128	0.224		
Total	55.888	133			

Similarly, there is a general consensus that it results in ability to integrate the concepts of various modules and also with lessons learnt in the past with an average mean score of 3.8358. while the 7th semester agreed the most with seeing improved ability to integrate the concepts with a mean value of

4.2778 followed by 3rd semester students with 3.8214 and the least mean value of 3.6848 by the 5th semester students.

Table 19: Descriptives for integration of concepts by semester

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
3rd	70	3.8214	0.67047	0.08014	3.6616	3.9813
5th	46	3.6848	0.56133	0.08276	3.5181	3.8515
7th	18	4.2778	0.59956	0.14132	3.9796	4.5759
Total	134	3.8358	0.64824	0.056	3.7251	3.9466

The difference in the mean values between the different semester students was found to be significant at p>0.05 for the conditions [F(2, 131)=5.846, p=0.004].

Table 20: One way ANOVA for integration of concepts by semester

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.58	2	2.29	5.846	0.004
Within Groups	51.308	131	0.392		
Total	55.888	133			

Bhutanese cases:

A single item question was asked in the survey to determine the origin of the cases used in classrooms across the colleges and it was found that almost 70 percent of the cases used in the classrooms are western-based cases. However, 4.5 percent of the responding students disagreed that the cases used were written in western context as presented in figure 7.
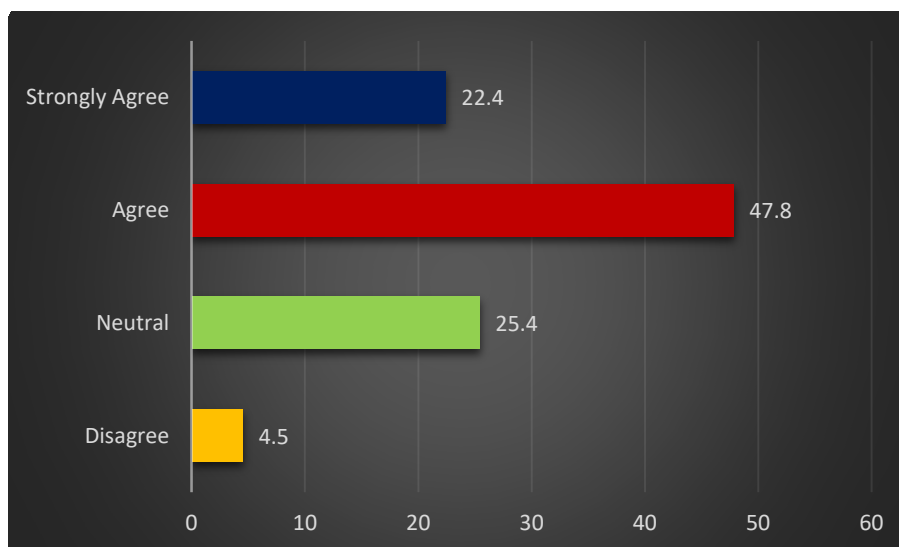

Figure 7: Level of agreement on "Cases used in the class are all written in western context"

Corresponding to this response, the students report that cases written in Bhutanese context will be both relevant and easer to comprehend as exhibited in table 21. And no significant difference was found on this parameter both by college and semester as indicated by tables 23 and 24.

Table 21: Descrptives for Bhutanese cases by college

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
GCBS	30	3.9333	0.59789	0.10916	3.7101	4.1566
CLCS	14	4.3929	0.52545	0.14043	4.0895	4.6962
CNR	17	4.2647	0.61537	0.14925	3.9483	4.5811
PCE	28	4.2679	0.58503	0.11056	4.041	4.4947
JNEC	30	4.1167	0.84775	0.15478	3.8001	4.4332
Sherubtse	15	4.3333	0.8165	0.21082	3.8812	4.7855
Total	134	4.1791	0.68661	0.05931	4.0618	4.2964

Table 22: One way ANOVA for Bhutanese cases by college

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.271	5	0.654	1.409	0.225
Within Groups	59.431	128	0.464		
Total	62.701	133			

Table 23: Descrptives for Bhutanese cases by semester

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
3rd	70	4.1286	0.72575	0.08674	3.9555	4.3016
5th	46	4.2391	0.6728	0.0992	4.0393	4.4389
7th	18	4.2222	0.57451	0.13541	3.9365	4.5079
Total	134	4.1791	0.68661	0.05931	4.0618	4.2964

Table 24: One way ANOVA for Bhutanese cases by semester

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.378	2	0.189	0.397	0.673
Within Groups	62.324	131	0.476		
Total	62.701	133			

Discussion:

The results show that though the students reported CBL to be better than the conventional method of lecturing, the perception was confirmed to be insignificant. Similar findings were also reported by Kaur, et al. (2020) who established that majority of their study group found CBL to be more effective than lecturing.

However, self-regulated learning was found to be happening as a result of CBL. This can be due to CBL's inherent nature to arose interest and motivation in the learners as a result of which learners are willing to put in extra effort of looking for more resources independently and attempt to understand the topic/case better (Blackburn (2016). This aligns with the findings of Gangwar (2017) who established that students use more of self-regulation and undertook more of independent study by exploring resources under CBL method of teaching/learning.

In the area of developing soft skills as result of learning under CBL, students from all the colleges and semester acknowledge this to be occurring and interestingly development of soft skills were reported more by students of higher semesters. This could imply that the period of exposure to CBL and development of soft skills are interrelated. Soft skills like interpersonal, presentation, communication, problem solving, teamwork and decision-making skills were found to be developing through CBL as a teaching-learning pedagogy (Li, Ye & Chen, 2019). Same findings have been reported by many studies on impact of CBL of learners (Giacalone, 2016; Raza, Qazi & Umer, 2020).

One of the most prominent outcomes of CBL, in the literature is deeper conceptual understanding (Gartmeier, et al.,2019). The results did not show any significant difference in in terms of deep learning across RUB colleges with different programs of study. This is different from the findings of Wijnen et al. (2017) who contend that learners from different academic disciplines can experience their learning in different ways under the same CBL method as their study established that students studying international business studies course showed lesser deep learning and more of surface learning as opposed to their counterparts studying science like medical and engineering, under CBL method.

The deeper understanding of the concepts was also seen to be significantly increasing with advancement in semester. These findings are consistent with the studies carried out by Gul, et al. (2018) and Blackburn (2016). Further, such general impact of CBL on learners aligns with the study conducted by Kaur, et al. (2020) on Dutch law students who reported that CBL creates an environment which stimulates deeper understanding and learning.

The students in RUB colleges confirmed that CBL allowed greater participation and more interaction both amongst the peers and with the tutors/teachers. Scholars argue that CBL requires students to engage in discussion and this could be one factor that contributes to development of certain soft skills like interpersonal skills and teamwork skills (Kaur, et al., 2020). Such outcomes were also reported by Gartmeier, et al. (2019), Wijnen, et al. (2017) Blackburn (2016) and Gul, et al. (2018).

Further, CBL is known to require the learner to integrate different topics so as to form complete and coherent answers to the issues presented in the case (Wijnen, et al., 2017). This is consistent with the current findings wherein the students reported that CBL helps them to integrate knowledge of various modules. Similar findings were also observed by Habasisa & Hlalele (2014) in their study on usage of CBL in teaching of economics.

With regard to the cases used in the classroom across the RUB colleges and context of cases in which they were written, majority of them seem to be ones written in western context. On the other hand,

results indicate students' preference for Bhutanese origin cases which will be more relevant and easier to understand.   Khan et al. (2018) and Pitt & Watson (2011) also reported the same concern in their study. And they concluded that the disconnect between the case context/settings and the learners renders the whole learning process to be challenging as well as disengaging, thereby almost nullifying the benefits of CBL.

Conclusion and Recommendation:

There is no doubt that CBL is preferred over lecturing method of teaching, by the learners, across the globe owing to its ability to bring out many benefits besides being more engaging for the learners. So is the case for the students of RUB colleges. Learners are able to see that CBL, though challenging as a learning pedagogy, can still provide far more benefits not just in the short-term but also in the long run.

However, literature suggests that the challenging element of CBL can be mitigated by adopting both lecturing and CBL methods in succession of one another especially for the learners who are novice to the subject (Grover, Garg, & Sood, 2020; Giacalone, 2016). Depending solely on CBL for delivery of a subject takes the learners immediately to a high level of thinking that requires more knowledge which the novice learners will not possibly have.

Scholars agree that one of the key challeneges in using CBL method of teaching/leanring is finding cases whose context can be comprehended by the learners (Li, Ye & Chen, 2019). But unfortunately, most of developing countries in Asia like Bhutan are huge consumers of western economy-based cases. Thus, the researchers argue that irrespective of what has been learnt, it's almost impossible to form an opinion on any matter as the learners have no or little understanding of the context. Secondly, the teachers themselves would also have only limited understanding of the context owing to their own limited exposure to the business settings of an advanced economy (Gravett et al., 2017). Logically, the teachers' lack of understanding will not translate in successful discussion of the case and evaluation of the students' observations and remarks will not be accurate. Consequently, the preparedness of the learners to tackle the real life situation becomes questionable (Pitt & Watson, 2011). Thus, there is a soaring need to have contextually appropriate cases.

Limitations:

The present study viewed the topic only from the students' perspective, this may not provide a holistic perspective on the topic under study. Further, covering all the RUB colleges could also provide a totally different view on the topic. With the current study being undertaken only through survey, the accuracy of the findings could be limited. Adopting an experimental approach to study this topic by assessing students' learning over a certain duration under CBL and lecturing method could provide more accurate impact of CBL on students' learning.

References:

Atwa, S., Gauci-Mansour, V., Thomson, R., & Hegazi, I. (2018) Team-based and case-based learning: a hybrid pedagogy model enhancing students' academic performance and experiences at first-year tertiary level. *The Australian Educational Researcher*. doi.org/10.1007/s13384-018-0282-y

Austin, M. J., & Packard, T. (2009). Case-based learning: Educating future human service managers. *Journal of*

Teaching in Social Work, 29, 216–236.

Bano, N., Arshad, F., Khan, S. & Safdar, C.A. (2015). Case based learning and traditional teaching strategies: where lies the future?. *Pak Armed Forces Med J, 65(1),* 118-24.

Bhardwaj, P., Bhardwaj, N., Mahdi, F., Srivastava J.P. & Gupta, U. (2015). Integrated teaching program using case-based learning. *International Journal of Applied Basic Medical Research, 5(S),* 24-8.doi: 10.4103/2229-516X.162262

Blackburn, G. (2016). Pictures and cases: Development of case- based teaching courseware to improve student understanding of statistics. *Journal of Economics and Economic Education Research. 17(*3). 165-182.

Curran, V. R., Sharpe, D., Forristall, J., & Flynn, K. (2008). Student satisfaction and perceptions of small group process in case-based interprofessional learning. *Medical Teacher, 30,* 431–433.

Dunbar, S., Watson, R.T., & Boudreau, M.C. (2007). Greenway Medical Technologies: Challenging the Goliaths in electronic medical records. *Communications of the AIS, 19,* 14–32.

Gangwar, S. (2017). Effectiveness of Project Based Learning (Constructivist Learning Approach) on Students Achievement in Science at Secondary Level. *An International Journal of Education and Applied Social Science. 8*(3). 737-741.DOI: 10.5958/2230-7311.2017.00129.5

Gartmeier, M., Pfurtscheller, T., Hapfelmeier, A., Grünewald, M., Häusler, J., Seidel, T. & Berberat, P. (2019). Teacher questions and student responses in case-based learning: outcomes of a video study in medical education. *BMC Medical Education.* 19:455 https://doi.org/10.1186/s12909-019-1895-1

Giacalone, D. 2016. Enhancing Student Learning with Case-Based Teaching and Audience Response Systems in an Interdisciplinary Food Science Course. *Higher Learning Research Communications. 6*(3). http://dx.doi.org/10.18870/hlrc.v6i3.304

Gravett, S., Beer, J., Odendaal-Kroon, R. & Merseth, K.K. (2017). The affordances of case-based teaching for the professional learning of student-teachers. *Journal of Curriculum Studies, 49(3),* 369–390. http://dx.doi.org/10.1080/00220272.2016.1149224

Grover S, Garg B, Sood N. 2020. Introduction of case-based learning aided by WhatsApp messenger in pathology teaching for medical students. *Journal of Postgraduate Medicine. 66.*17-22. DOI: 10.4103/jpgm.JPGM_2_19

Habasisa, M. & Hlalele, D. (2014). Using Case Study as a Teaching and Learning Strategy in the Teaching of Economics: A Literature Review. *Mediterranean Journal of Social Sciences, 5(23),* 999-1008.

Hahn, W. 2018. Assurance of learning: An evaluation of how grade inflation and course pedagogy impacts students' learning sustainability in business core courses. *Journal of Higher Education Theory and Practice. 18*(2) 128 – 137.

Hasamnis, A., Arya, A., & Patil, S. 2019. Case-based Learning: Our Experience in Clinical Pharmacology Teaching. *Journal of pharmacy and Bioallied Sciences. 11.* 187-189. DOI: 10.4103/jpbs.JPBS_135_18

Kaur, G., Rehncy, J., Kahal, S., Singh, J., Sharma, V., Matreja, P. & Grewal, H. (2020). Case-Based Learning as an Effective Tool in Teaching Pharmacology to Undergraduate Medical Students in a Large Group Setting. *Journal of Medical Education and Curricular Development. 7.* 1–6. DttOpsI:/1/d0o.i1.o1rg7/71/02.13187271/23085221020952200694 20640

Khan, M.A., Qamar, K., Khalid, S., Javed, H., Malik, M., Gondal, A., Zafar, H., Shoaib, A., Aman, R., Khan, A., UlAbideen, A. Z., Bilal, A. & Imtiaz, F. (2015). Comparison of case based learning with conventional teaching- students' perspective. *Pak Armed Forces Med J, 65(3)*, 415-19.

Khan, M.A.. Tasawar, A., Khan, H.A., Qamar, K. & Saga, Z. (2018). Evaluation of absenteeism in case based learning sessions. *Pak Armed Forces Med J, 68(6),* 1527-32

Kilbane, T., Freire, P.R., Young, P., Hong, P. & Pryce, J.M. (2014). A Case-based Collaborative Learning Model for Teaching Advocacy. *Social Work Education,* 33(8), 1054–1069. http://dx.doi.org/10.1080/02615479.2014.937415

Kinsella, E. A., & Pitman, A. (2012). *Phronesis as professional knowledge: Practical wisdom in the professions.* Rotterdam: Sense.

Kowalczyk, D. (2018). *Descriptive Research Design*. Retrieved on 23rd March, 2019, from Study.com: https://study.com

Lee, S., Lee, J., Liu, X., Bonk, C.J. & Magjuka, R.J. (2009). A review of case-based learning practices in an online MBA program: A program-level case study. *Educational Technology & Society, 12*(3), 178-190.

Li, S., Ye, X. & Chen, W. (2019). Practice and effectiveness of "nursing case-based learning" course on nursing student's critical thinking ability: A comparative study. *Nurse Education in Practice, 36*(2019), 91-96. doi.org/10.1016/j.nepr.2019.03.007

Pitt, L. & Watson, R. T. (2011). The case for cases: writing and teaching cases for the emerging economies. *Information Technology for Development. 17(4),* 319–326. doi: 10.1080/02681102.2011.604080

Raza, S., Qazi, W., & Umer, B. 2020. Examining the impact of case-based learning on student engagement, learning motivation and learning performance among university students. *Journal of Applied Research in Higher Education. 12*(3)., 517-533. DOI 10.1108/JARHE-05-2019-0105

Roscoe, J.T. (1975). *Fundamental Research Statistics for the Behavioural Sciences*. 2nd edition. New York: Holt Rinehart & Winston.

Sheng, T., Wang, M., Hu, Q, Ling, H. & Chen, S. 2019. Effectiveness of the Standardized Patient (SP) and Case-Based Learning (CBL) in Teaching Cell Biology to College Students Majoring in Medical Laboratory Technology. *Research Journal of Science and Technology. 11*(4). 265-267. DOI: 10.5958/2349-2988.2019.00037.8

Srinivasan, M., Wilkes, M., Stevenson, F., Nguyen, T., & Slavin, S. (2007). Comparing problem-based learning with case-based learning: Effects of a major curricular shift at two institutions. *Academic Medicine, 82*, 74–82.

Wijnen, M., Loyens, S., Smeets, G., Kroeze, M. & Molen, H. 2017. Comparing problem-based learning students to students in a lecture-based curriculum: learning strategies and the relation with self-study time. *European Journal of Psychology Education. 32*. 431–447. DOI 10.1007/s10212-016-0296-7

Wright, S. & Grenier, M. (2009). Examining Effective Teaching via a Social Constructivist Pedagogy: Case study. *International Journal of Education, 130 (2),* 255-264.

Annexure 1:

Multiple Comparisons

Dependent Variable: Soft Skills

	(I) Semester of study	(J) Semester of study	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
LSD	3rd	5th	-.30303*	0.0878	0.001	-0.4767	-0.1293
		7th	-0.22302	0.12225	0.07	-0.4649	0.0188
	5th	3rd	.30303*	0.0878	0.001	0.1293	0.4767
		7th	0.08001	0.12861	0.535	-0.1744	0.3344
	7th	3rd	0.22302	0.12225	0.07	-0.0188	0.4649
		5th	-0.08001	0.12861	0.535	-0.3344	0.1744

* The mean difference is significant at the 0.05 level.

Annexure 2:

Multiple Comparisons

Dependent Variable: Pariticipation

	(I) College	(J) College	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
LSD	GCBS	CLCS	-.49524*	0.19338	0.012	-0.8779	-0.1126
		CNR	-.40980*	0.18137	0.026	-0.7687	-0.0509
		PCE	-.35238*	0.15699	0.027	-0.663	-0.0417
		JNEC	-0.22222	0.15426	0.152	-0.5275	0.083
		Sherubtse	-0.25556	0.18893	0.179	-0.6294	0.1183
	CLCS	GCBS	.49524*	0.19338	0.012	0.1126	0.8779
		CNR	0.08543	0.21563	0.693	-0.3412	0.5121
		PCE	0.14286	0.19557	0.466	-0.2441	0.5298

		Mean Diff	Std. Error	Sig.	Lower	Upper
	JNEC	0.27302	0.19338	0.16	-0.1096	0.6557
	Sherubtse	0.23968	0.22202	0.282	-0.1996	0.679
CNR	GCBS	.40980*	0.18137	0.026	0.0509	0.7687
	CLCS	-0.08543	0.21563	0.693	-0.5121	0.3412
	PCE	0.05742	0.1837	0.755	-0.3061	0.4209
	JNEC	0.18758	0.18137	0.303	-0.1713	0.5465
	Sherubtse	0.15425	0.21165	0.467	-0.2645	0.573
PCE	GCBS	.35238*	0.15699	0.027	0.0417	0.663
	CLCS	-0.14286	0.19557	0.466	-0.5298	0.2441
	CNR	-0.05742	0.1837	0.755	-0.4209	0.3061
	JNEC	0.13016	0.15699	0.409	-0.1805	0.4408
	Sherubtse	0.09683	0.19117	0.613	-0.2814	0.4751
JNEC	GCBS	0.22222	0.15426	0.152	-0.083	0.5275
	CLCS	-0.27302	0.19338	0.16	-0.6557	0.1096
	CNR	-0.18758	0.18137	0.303	-0.5465	0.1713
	PCE	-0.13016	0.15699	0.409	-0.4408	0.1805
	Sherubtse	-0.03333	0.18893	0.86	-0.4072	0.3405
Sherubtse	GCBS	0.25556	0.18893	0.179	-0.1183	0.6294
	CLCS	-0.23968	0.22202	0.282	-0.679	0.1996
	CNR	-0.15425	0.21165	0.467	-0.573	0.2645
	PCE	-0.09683	0.19117	0.613	-0.4751	0.2814
	JNEC	0.03333	0.18893	0.86	-0.3405	0.4072

* The mean difference is significant at the 0.05
level.

Annexure 3:

Multiple Comparisons

Dependent Variable: Integration

	(I) College	(J) College	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
LSD	GCBS	CLCS	-1.17857*	0.1531	0	-1.4815	-0.8756
		CNR	-1.05882*	0.14359	0	-1.3429	-0.7747
		PCE	-1.08929*	0.12429	0	-1.3352	-0.8434
		JNEC	-1.06667*	0.12213	0	-1.3083	-0.825
		Sherubtse	-1.00000*	0.14958	0	-1.296	-0.704
	CLCS	GCBS	1.17857*	0.1531	0	0.8756	1.4815
		CNR	0.11975	0.17071	0.484	-0.218	0.4575
		PCE	0.08929	0.15483	0.565	-0.2171	0.3956
		JNEC	0.1119	0.1531	0.466	-0.191	0.4148
		Sherubtse	0.17857	0.17578	0.312	-0.1692	0.5264
	CNR	GCBS	1.05882*	0.14359	0	0.7747	1.3429
		CLCS	-0.11975	0.17071	0.484	-0.4575	0.218
		PCE	-0.03046	0.14544	0.834	-0.3182	0.2573
		JNEC	-0.00784	0.14359	0.957	-0.292	0.2763
		Sherubtse	0.05882	0.16756	0.726	-0.2727	0.3904
	PCE	GCBS	1.08929*	0.12429	0	0.8434	1.3352
		CLCS	-0.08929	0.15483	0.565	-0.3956	0.2171
		CNR	0.03046	0.14544	0.834	-0.2573	0.3182
		JNEC	0.02262	0.12429	0.856	-0.2233	0.2686
		Sherubtse	0.08929	0.15135	0.556	-0.2102	0.3888
	JNEC	GCBS	1.06667*	0.12213	0	0.825	1.3083
		CLCS	-0.1119	0.1531	0.466	-0.4148	0.191
		CNR	0.00784	0.14359	0.957	-0.2763	0.292

	PCE		-0.02262	0.12429	0.856	-0.2686	0.2233
Sherubtse	Sherubtse		0.06667	0.14958	0.657	-0.2293	0.3626
	GCBS	1.00000*		0.14958	0	0.704	1.296
	CLCS		-0.17857	0.17578	0.312	-0.5264	0.1692
	CNR		-0.05882	0.16756	0.726	-0.3904	0.2727
	PCE		-0.08929	0.15135	0.556	-0.3888	0.2102
	JNEC		-0.06667	0.14958	0.657	-0.3626	0.2293

* The mean difference is significant at the 0.05 level.

Annexure 4:

Multiple Comparisons
Dependent Variable: Integration

	(I) Semester of study	(J) Semester of study	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
LSD	3rd	5th	0.13665	0.11878	0.252	-0.0983	0.3716
		7th	-.45635*	0.16539	0.007	-0.7835	-0.1292
	5th	3rd	-0.13665	0.11878	0.252	-0.3716	0.0983
		7th	-.59300*	0.17399	0.001	-0.9372	-0.2488
	7th	3rd	.45635*	0.16539	0.007	0.1292	0.7835
		5th	.59300*	0.17399	0.001	0.2488	0.9372