Teaching Module through Cases for Developing Students' Analytical Thinking: An Action Research

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ABSTRACT

The action research was conducted to determine the effect of case-based teaching-learning on students' analytical thinking, experimented with the final year Bachelor of Business Administration (BBA) students, Gedu College of Business Studies, Royal University of Bhutan. The study was conducted between July and December, the Autumn Semester of 2020. There were 38 students in total who studied *HRM307 Industrial Relations* as their fifth major module for Human Resource Management group. Based on the survey conducted towards the end of the completion of module where 33 students participated, their opinion that the 'case-based teaching-learning have improved' analytical thinking stands at the mean value of 3.4 (out of 5). This indicates that the case-based teaching-learning intervention effect their analytical skills. The comparative study on the scores of assignment was also conducted. Although the mean score of the first assignment and the second assignment does not show significant difference, the average score of the first assignment and the third assignment has a statistically significant difference. This was confirmed through the paired sample t-test. Thus, it can be concluded that when the case intervention was prolonged over a period of time, it positively impacted students' enhancement of analytical thinking.

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Introduction

Royal University of Bhutan (RUB) is young yet aspiring 'to be internationally recognized university steeped in GNH values'. Gedu College of Business is one of the sister colleges providing business and management programmes in line with international practices. The academic staff or module tutors are encouraged to use creative teaching strategies to complement traditional way of lecturing in the class. Even going by the ultimate outcome, RUB graduates are expected to have acquired certain academic skills such as critical thinking, self-directed learning, use information to deduce logical conclusion, and be able to think analytically. Hence, the teaching-learning method should address these requirements. Module tutors have the direct role in shaping the students' learning and knowledge acquisition. The Case based teaching is one of the active learning methods which makes students relate theoretical concepts to the real life situations. Also, through case discussions, students develop skills related to reading, identifying issues and coming up with thoughtful decisions and alternative solutions with the use of available information, critical reasoning and analytical thinking. The student participants become interactive and inquisitive. Thus, case based teaching-learning blends 'effective and cognitive' learning. Importantly, the case method of teaching can be very effective for inductive learners. Researches have concluded that majority of the students are inductive learners than deductive reasoners. Since Gedu college of Business Studies imparts business knowledge, it only makes sense that students are oriented based on the realities of the business situation than all

theoretical approach: teaching through cases. This Action Research was set considering these contexts. Whether the tutor's case based teaching enhances the analytical thinking of students was ascertained through the research. The findings of this study was intended to provide direction to the researcher in particular and teaching colleagues in general, what needs to be improved in the case based teaching if it continues.

Reconnaissance

Situational Analysis

Gedu College of Business Studies is one of the constituent colleges of the Royal University of Bhutan with the vision "to be a centre of excellence in value driven business education". The college currently offers full time contemporary business and management education at different levels enhancing knowledge through research infused curricula. There are three different programmes being offered as of today: Bachelor of Business Administration (BBA), Bachelor of Commerce (BCom) and Master of Business Administration (MBA). The current status of knowledge transfers is based mostly on the traditional way of class lecture sessions. Only a few tutors use cases. However, as a business college, the case based teaching and learning is concluded to be the best way of knowledge sharing. The world's top university such as Harvard University is known for this particular way of content delivery.

Generally, the members of the faculty believe that even the final year students lack 'analytical thinking' skills. The B5 (Expectations of RUB Degree Graduates), section 2.2 of *The Wheel of Academic Law* states that RUB graduates

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should possess general academic skills derived from subject matter which include 'critical reasoning, analysis, evaluation, evidence handling, identification of problems and their solutions….'. Hence, lecturing method alone cannot be effective in inculcating these qualities without involving strategies such as case based teaching. Business college should depend less on theoretical aspects but on the real life situation for knowledge acquisition.

The target groups for this study were two sections of third year (6th semester) BBA students who were taking major in Human Resource Management. The students studied *HRM307 Industrial Relations* as their 5th Major module. Despite the theoretical nature of the module, students were taught the concepts through cases. The HRM VI A had 6 female and 10 male students while HRM VI B had 10 female and 13 male students. The total strength stood at 39 who studied the HRM307 module. Hence the class size for both the sections were relatively smaller with 16 and 23 students respectively. Although at the normal session, time table was designed in such a way that each period has 80 minutes, and each class having three periods in a week, due to the COVID-19 pandemic situation, students were sent home and the real time interaction time table had to be changed. The changed class time table had 2-hour period slotted for real time interaction for every module a week. However, considering that the cases could be made accessible through Virtual Learning Environment (VLE) and discuss virtually, the relevance of case based teaching and learning was still valid. The case discussion happened through VLE forum and through the design of interactive pathway using eXe software.

When it comes to accessibility of the cases, the tutor/researcher already had the account with Harvard Business Review publishing. Having an educator membership had the advantage of getting access to various cases to be used for teaching-learning. And, as mentioned in the Research Design section, the definition of the case for this study took into account materials such as 'news articles, academic articles, actual short cases, abstract or executive summary of research papers' which were relevant to the module. Those materials were easily available, albeit the tutor had to be a little careful while selecting the source.

Competence

Student: Since the target groups were the final year students, they were more participative, confident, and able to express their thoughts. Comparatively, having groomed in the college for more than two years, they exuded 'maturity' in terms of learning. Also, they had been exposed to case based learning to certain level. They were aware of the importance of case discussions and had the basic understanding of case procedure.

Critical Friend(s): For this Action Research, the Dean of Research and Industrial Linkages (DRIL) and one of the senior Human Resource Management faculty member had been identified as critical friends. While the DRIL had the research background and experience, the identified senior faculty had been immense help in terms of his subject expertise. Both of these critical friends had academic zeal who provided adequate comment in the course of undertaking this research.

Self (Researcher)

As an academic, the author had opportunities to undertake various consultancy projects for corporate organizations. The author was engaged in developing Human Resource Development Master Plan and conducting Employee Satisfaction Survey for a Construction Company of Bhutan,

2019 (Construction Development Corporation Limited), Customer Satisfaction study for an Insurance Company, 2012 (Royal Insurance Corporation of Bhutan Limited), Feasibility and Socio-Economic Impact Study for a Hydro-power Project , 2011 (Wangchuk Hydropower Project). Involvement in these consultancy projects provided hands-on experience in conducting research, preparing report and making presentations. Author also attended research seminars, presented papers, and published journal articles. In particular, had an experience of being Participatory Action Research member of Royal University of Bhutan (RUB) Wide research (2011-12).

Also, supervises the Undergraduate level Research Projects as research Mentor, and guides the student research groups.

While pursuing Master's Degree in Human Resource Management, Research Project was among the required component for award of the Degree, and had the opportunity to study Quantitative and Qualitative methods of Research through coursework as well.

Literature Review

According to Boney(2015) teaching through cases improve 'student performance and perception of learning gains'. The author states that 'case studies, regardless of the source, are significantly more effective than other methods of content delivery at increasing performance on examination questions'. Thus, it is suggested that case studies should be a preferred method of teaching variety of concepts in courses. However, there are many types of case studies. Johnson (nd) expresses 'new and more enhanced cases based on real company sometimes are not reliable'. While teaching the content though cases has been believed to effective, it can be demotivating to the learners as well. "Case studies tend to improve students' motivation and self-efficacy, but it also tends to discourage and/or demotivates them if they do not get the feedback that they need" (Johnson, nd). By this logic, case alone cannot be effective but is determined by how the facilitator or the teacher use it appropriately. There is also another pertinent concerns with case teaching. Mostert (2007) cautions that research-to-practice gap may pose barriers. He cites an example of the reason that "undergraduate students may not have theoretical or practical experiential background to be abet to relate case problems and solutions to relevant knowledge and theory bases". These are the contradicting findings.

While there are many researches concluding the case method of teaching as desirable, there are another group of experts expressing that case based teaching needs to fulfil certain requirements, prominently pertaining to two main stakeholders of learning: case facilitators and the learners. The point is, as long as the facilitator is well equipped and have the knowledge, commitment and experience to handle case, and the learners have certain level of theoretical knowledge and ability to connect to the practical setting, the case based content delivery can be more effective than the traditional lecture method of imparting the content. Ellet (2018) shared that one aspect that the case method causing problem for learner is due to the fact that they are unsure of discussion and their role in the case based teaching. Thus, Ellet mentions in his Case Study Handbook the three critical aspect of the student role in the case method: analysis, discussion, and arguments. For effective case based learning, these should not be ignored. If these interventions are taken into consideration, the author advocates that the case method of teaching provides analytical tools which helps learners "to

sort, organize and reflect on the content of the case and use the concepts and framework taught in [business] course more effectively".

The Centre for teaching and learning, Queen's University (n.d), states that the case based learning is used "to provide students with a relevant opportunity to see theory in practice, to require students to analyze data in order to reach a conclusion, and to develop analytic, communicative and collaborative skills along with content knowledge:

Analytical thinking is defined as "the ability to scrutinize and break down facts and thought into their strengths and weakness, capacity to think in a thoughtful, discerning way, to solve problems, analyse data, and recall and use information. (Amer,2005). It can be deduced from this definition that the best part of analytical thinking is rational problem-solving using coherent thought process.

Research Question

• **Will my Case-based teaching help students enhance their analytical thinking?**

Research Design

For this action research, the mixed method of research deign was used. The standard questionnaires was used as data collection tool to collect students' level of case analysis and the analytical skills, perception of case based learning and its resultant enhanced analytical thinking. The respondents or the students were asked to fill the questionnaire. The questionnaire was constructed to extract the data related to demography (gender, Funding status-Government/Self finance, class section), their level of case analysing and analytical thinking. The 5-point Likert items was framed to construct case analysis and analytical thinking dimensions. The survey questionnaire was composed of five dimensions: *Case Awareness Level; Case Quality; Case Participation; Case-Module Alignment; and Analytical Thinking*.

In addition to questionnaire, the other tool for data collection included case assignments and other open-ended question assignments. The researcher also kept record of the change in the content part of the assignment through observation. The marks secured from assignments was also used for the analysis.

The cases were used as main intervention for teaching and learning delivering the content of the module. Though the definition of 'case' may differ, for the purpose of this particular study, cases were 'relevant news articles, short academic cases, abstracts, executive summary, or any other academic articles'. Hence, these materials (considered cases for the purpose) were made accessible to students for discussion. Although initially intended for class room discussion, the case discussion happened online either through real time using Zoom class or through VLE.

Analysis Method

To see if the case based teaching as an intervention enhance students' analytical thinking, 'Paired sample t-test' was used to compare score of two assignments (one each for pre and post intervention). The t-test is an inferential statistic used to detect if there is a significant difference between the means of two groups. Although the respondents were the same students, the data were grouped into two based on the initial assignment scores and the scores of assignment which were given at the end after case based teaching intervention. This same data analysis tools also was used to see the difference in perception level of analytical thinking collected through 5-Point Likert scale questionnaire. Some social scientists express that such analysis tool can be engaged if the data is based on more than 5-point scales.

Other simple tools such as frequency, percentage and mean analysis was also used to explain phenomenon.

Data Analysis & Discussion

Participants' Profile

For February-June 2020 semester, there were total of 38 Bachelor of Business Administration students who studied *HRM307 Industrial Relations* as their fifth Human Resource Management major module. The total strength is the combination of two sections, BBA HRM VI 'A' and 'B'. Of the total 23 (representing 60.5%) were males. And more than 68% belong to Government Funding (Scholarship). However, not all these students have participated in the case study opinion survey. The response rate stands at 86.4% with 33 (13 representing section A and 20 from section B) of 38 students taking part in the survey participation. The details of the participants are mentioned in the table.

Results & Finding

Results based on comparison of assignment marks

Context: As per the Module descriptor for *HRM307 Industrial Relations*, students were assessed based on the following:

• Two Analytic Assignments (Assignment 1 & 2) of 800 words. Student scored mark based on the criteria which included: substance; organization such as clarity of controlling argument and main ideas; analytic thinking and problem solving; overall effectiveness of writing style with creativity and originality; and reaching a reasonable conclusion.

• Case Study Assignment where students were assigned a case to read and address the questions at the case with a 1000-word write-up. Students were assessed on their ability to recognize, analyse, and discuss the key issues in the case; provide rational and evidenced recommendations and on their ability to appropriately use reference material to support their arguments.

• The other area of assessment included Quiz, Class Participation, Midterm examination and Semester-end examination.

The Assignment 1 task was given to the students on 13 March 2020; Assignment 2 on 8 April 2020; and Assignment 3 (Case assignment) on 27 April 2020. When the first assignment task was given, the class has not started using the case-based teaching and learning. Hence the score of the first

Table 1. Participants' Profile

Determinants	Actual Class Composition		Students who participated in Case Study Survey	
	BBA HRM VI 'A'	**BBA HRM VI 'B'**	**BBA HRM VI 'A'**	**BBA HRM VI 'B'**
Total Students	16	23	13	20
Male	10	13	9	11
Female	6	10	4	9
Govt Funding	9	17	7	15
Self-Funding	7	6	6	5

Table 2. Paired Samples Statistics: Assignment1 & Assignment2.

Paired Samples Statistics		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Assignment1	7.5	38	0.69749	0.11315
	Assignment2	7.6184	38	0.74602	0.12102

Table 3. Paired Samples Test: Assignment1 & Assignment2.

Paired Samples Test		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Assignment1 – Assignment2	-0.11842	0.99786	0.1618	-0.4464	0.209	-0.732	37	0.469

Table 4. Paired Samples Statistics: Assignment1 & Assignment3.

Paired Samples Statistics		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Assignment 1	7.5	38	0.69749	0.11315
	Assignment3	11.5066	38	0.42904	0.0696

Table 5. Paired Samples Test: Assignment1 & Assignment3.

Paired Samples Test		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Assignment1 Assignment3	-4.00658	0.7567	0.12275	-4.2553	-3.75786	-32.639	37	0

assignment was considered as a pre-intervention data. By the time students were tasked with second and third assignments, the case-based teaching-learning was in full swing. By this logic, the scores from these assignments, for the purpose of study, were taken as post-intervention data. Thus, to see the effect on case-based teaching-learning on students' enhanced analytical thinking, the paired sample t-test was conducted.

A paired-samples t-test was conducted to evaluate the impact of the case-based teaching-learning intervention on students' Analytical Thinking based on the scores of Assignment1 and Assignment 2. There was no statistically significant increase in scores of Assignments from time 1 (M=7.5, SD=0.69749) to Time 2 [M=7.6184, SD=0.74602, t(37)=-0.732, p>.05]. The eta squared statistic was not calculated as the result indicated insignificant influence of case-based teaching intervention.

Also, a paired-samples t-test was conducted to evaluate the impact of the case-based teaching-learning intervention on students' Analytical Thinking based on the scores of Assignment1 and Assignment 3. Unlike the paired sample t-test result of Assignment1 and Assignment 2, the paired sample t-test of Assignment1 and Assignment3 indicates statistically significant increase in scores of Assignments from time 1 (M=7.5, SD=0.69749) to Time 3 [M=11.5066, SD=0.42904, t(37)=-32.639, p<.05]. The eta squared statistic (.9664) indicated a very large effect size.

Thus it can be inferred that the insignificant influence of case-base teaching until the assignment2 is due to the fact that the students were not engaged enough with case analysis

and more cases over the period of time, their analytical thinking improved. There is significant difference of assignment mean scores between the first assignment and the third assignment. Hence, it can be concluded that there is a gradual influence of the case-based teaching and learning interventions on students' analytical thinking.

Among the five Continuous Assessment Components, students scored 'Outstanding' in Quiz and Class Participation with average score of 94 percent and 82 percent respectively. According to the *Wheel of Academic Law* of the Royal University of Bhutan, the score of more than 80% is categorised under outstanding academic performance. The rest of the assessment score falls within the 'Very Good (70-79.9%)' category. The details if each assessment score is reflected in the Table 6 and Figure 1.
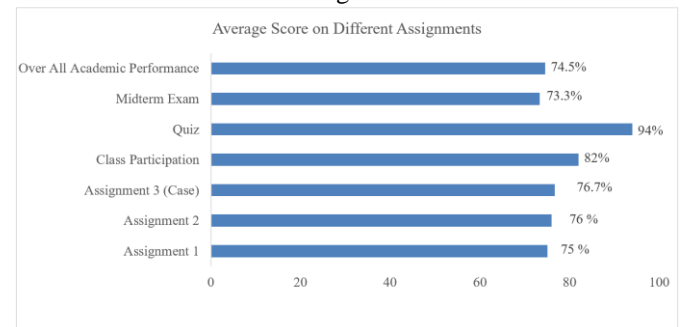

Figure 1. Average Score of Different Assignments.

Table 6. Individual Mean Score of assessment Components.

Assignment	N	Mean	Mean (out of 100)
Assignment 1	38	7.5 (out of 10)	75.0
Assignment 2	38	7.6(Out of 10)	76.0
Assignment 3	38	11.5 (Out of 15)	76.7
Class Participation	38	4.1 (Out of 5)	82.0
Quiz	38	14.1(Out of 15)	94.0
Midterm Exam	38	11.0 (Out of 15)	73.3
Over All Academic Performance	38	74.5 (Out of 100)	74.5

Table 7. Reliability Test Result by Dimensions.

Dimension	Cronbach's Alpha	N of Items	Reliability
1. Case Awareness Level	0.914	6	Reliable
2. Case Quality	0.905	5	Reliable
3. Case Participation	0.820	5	Reliable
4. Case-Module Alignment	0.960	6	Reliable
5. Analytical Thinking	0.748	6	Reliable

Table 8. Respondents' opinion on case-based teaching-learning.

Respondents' opinion on case-based teaching-learning								
Classification		**Statistics**	**Over-all**	**Case Awareness Level**	**Case Adequacy**	**Case Participation**	**Case Module Alignment**	**Analytical Thinking**
Section	HRM A	Mean	3.38	3.2	3.6	3.6	3.2	3.3
		N	13	13	13	13	13	13
	HRM B	Mean	3.54	3.5	3.9	3.9	2.9	3.5
		N	20	20	20	20	20	20
Sex	Male	Mean	3.66	3.5	3.9	3.9	3.4	3.6
		N	20	20	20	20	20	20
	Female	Mean	3.2	3.2	3.6	3.5	2.5	3.2
		N	13	13	13	13	13	13
Funding	Govt Funding	Mean	3.54	3.4	3.9	3.9	3.2	3.3
		N	22	22	22	22	22	22
	Self Funding	Mean	3.34	3.3	3.5	3.5	2.8	3.6
		N	11	11	11	11	11	11

Results based on the analysis of Learners' Survey Opinion

Prior to the analysis of the survey data, the internal consistency of the survey instrument was examined. The survey questionnaire for collecting learners' opinion about case-based teaching and learning consisted of 28 Likert statements which were divided into five dimensions: *Case Awareness Level; Case Quality; Case Participation; Case-Module Alignment; and Analytical Thinking*. The reliability test confirmed the internal consistencies of the instrument for all the dimensions. For the social sciences, if the Cronbach's Alpha value exceeds 0.7, it is considered to be reliable. The details are provided in the table 7
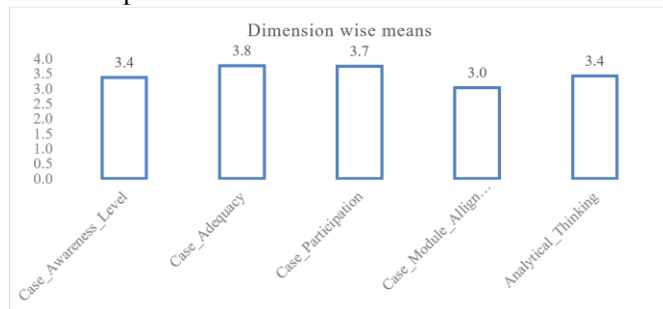
Figure 2. Cas opinion: Dimension-wise mean score.

Among the five dimensions of the case opinion survey instrument, students agreed more with the 'case adequacy' with mean value of 3.8 followed by 'case participation'. While the students opinion on 'Case awareness level' and 'Analytical Thinking' stand mean value of 3.4 each, the students seem to feel that the cases provided for the teaching-learning can be improved to aligned well with the module descriptor. The agreement on 'case-module-alignment' stand at the mere mean value of 3.

Comparing the overall mean value of survey opinion on case-based teaching-learning, HRM B tends to agree more than HRM A with a very thin margin. However, in terms of sex, Male group has mean value of 3.6 while the value of Female students stand at mere 3.2. There is a big difference of opinion between male and female on how they perceive case-based teaching-learning. And the government-funded students seem to enjoy the cased-based teaching-learning a slightly higher than self-funded students.

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