

A Paradigm shift from BCN to DCN strategy for effective knowledge transfer in foundation courses

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Abstract:

Outcome Based Education (OBE) came into practice in India in 2014. Earlier the priority of most of the faculty is just to complete the syllabus and for students to score better grade. One of the biggest challenges for faculty members in implementing OBE is to change the focus of students from scoring marks to learning the content particularly at the beginning of the programme while teaching fundamental courses. In this paper, the authors made an attempt to compare two strategies of teaching and learning; the Broiler Chicken Nourishing (BCN) verses the Desi Chicken Nourishing (DCN) in an Indian perspective. The BCN strategy shows only a short term and narrow goal though productive, it was in DCN strategy there is effective knowledge transfer which promotes more of self learning and self realization. A case study was done on Electric Circuit Analysis for second semester Electrical Engineering students. The analysis shows that DCN is more learner centered and yields fruitful results when compared to BCN. The DCN approach promotes original thinking of the students and develops good interpersonal skill.

Key Words: Outcome Based Education, Millenials, Chicken feeding, team building, Mentoring

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1. Introduction:

Since the introduction of OBE in technical education a significant change has been occurring in teaching and learning process across the country, a change that promises to bring a dramatic and long – lasting impact. Periodically, we are passing the torch from one generation to other and now it is Generation X passing to those who are called Millennials. It has been always a problem for those who are depending on traditional training methods to prepare the Millennial generation for work in various professions. Many research works have been published on describing the characteristic changes between Generation and X and Millennial generation. Eric et al, suggest effective ways of facilitating the millennial generation for creating learning environment for educators by correlating with the available literature [1].

Borges et al, compare the Millennial and Generation X medical students with the sixteen Personality Factor Questionnaire. Analysis shows that there are changes in 10 of the 16 factors. Millennial generation have higher Rule – Consciousness and Perfectionism, whereas Generation X students have higher self – realization. Given the differences among the generational groups, the authors propose possible education implications for medical school academic affairs and student services [2].

Grover et al, examines the preference of Millennial students in terms of collaboration, connecting and creating social change. Based on analysis they have identified four principles for effective teaching. The four principles [3] are, facilitate cooperation among students, prepare students for diversity and cross-cultural interaction, cultivate knowledge creation and promote active engagement inside and outside the classroom. Robert et al

proposes various successful tools for creating a good learning environment for Millennial students [4].

Florence et al proposes a preceptor ship/mentorship model designed to socialize students into the nursing profession and to promote their confidence/competence and promote their critical thinking ability. After completion, participants were surveyed and individually interviewed. Data analysis shows that the program is highly informative, supportive and highly valued. The knowledge shared by the authors gives great hope for preceptor support and facilitation [5].

Based on the above studies, the authors studied various possibilities for effective implementation of OBE with an Indian perspective and in specific with teaching and learning process in Tamilnadu, the southernmost part of India. In this paper, the challenges faced by faculty and student particularly during the transition phase period from school education to college education are addressed.

2. Methodology:

Understanding the behavioral characteristics of students is always an integrated part of teaching learning process. In the school education in Tamilnadu the thrust is more on scoring rather than making them understand the concept, always teaches the students to focus mostly on scoring marks than to understand The question and answer pattern in school education will make the students mostly memorize and recollect than to correlate the concepts with real world. These practices fail to promote self learning and self realization among the students. As a result, the students find it difficult to accept the change in teaching and assessment pattern during the beginning of their college days. This imposes a major challenge to faculty who are teaching foundation courses. Hence, it becomes essential to find useful tools to help faculty to deliver the course in a meaningful way for effective knowledge transfer.

Nature is the best teacher and she always teaches the best things for life. Teaching and Learning is not exemption for it. In this paper, two strategies for teaching learning practices are discussed and compared. They are,

- a. Broiler Chicken Nourishing Strategy (BCN)
- b. Desi Chicken Nourishing Strategy (DCN)

In BCN, where the chicken are locked in cages and are fed by farm servants. They simply depend on the food fed in the farm and lack any self work. This method of feeding is highly productive and profitable in a short duration. At the same time, if such chicken are kept out of the cages, they find it difficult to adopt themselves to the new environment. They cannot to realize their freedom and cannot think and act accordingly. In education BCN is like feeding the students with spoon. Teaching them all they need to learn and making them to depend only on faculties may help the student to gain more marks. But, the BCN strategy will not support self learning, self realization and critical thinking.

At the same time, the DCN approach gives more exposure to the students towards learning. In case of DCN,

the chicks are taken care by the mother chicken. The mother chicken takes the chick to the real world to find their food. The mother chicken teaches the process of stirring up the sand and finds the prey. She also breaks the hard food into pieces to feed the chick. After ample learning the chick tries to repeat the same process of its own and started exploring its world in its own way. In this process, the chicks find a comfortable learning environment under the shadow of its mother which eventually promotes self learning and self realization. Hence, it is planned to adopt the DCN approach for creating a learning environment for students.

To adopt DCN strategy for teaching and learning process, chicken – chick (CC) teams should be formed in a class. A class should be divided into small groups and for each group a mentor should be assigned. The mentors may be the senior students of the same institution. The mentors should be properly trained by the faculty to help students to solve complex problems, to carry collaborative learning, to do small projects etc. during the course. The mentor will help their team step by step towards self learning. In this paper, the DCN concept was introduced for Electric Circuit Analysis Course for second semester Electrical Engineering Students in the academic year 2016 - 2017. The process of implementation and the result analysis are discussed.

3. Implementation:

Electric Circuit analysis is one of the most essential and fundamental subjects for every electrical engineering student. While teaching the subject, it is found that the students were not able to solve

during tutorial sessions. Also, when a question or problem was asked in quiz/exam with the addition of few complexities most students find it difficult to find the solution. Based on the result analysis of first continuous assessment test (CAT), it is proposed to implement the DCN strategy for the class. The implementation of DCN strategy in a classroom involves the following stages:

A. Formation of CC team:

In second semester electrical and electronics engineering there were 119 students. Hence it is designed to create CC teams with 4 students per team and a mentor for each group. The students were selected for this purpose only based on their willingness. Initially 59 students opted for DCN learning and slowly the number reduced to 48. There were 12 CC teams. The group composition should be such that the average GPA of students should be around 7.5 as the class average was only 7.5. And each team should a student from North Eastern state or other parts of India and there will be one student who did school studies in the regional language Tamil.

B. Training the mentors:

The mentors were final year students, who have a passion for teaching. A concept test was conducted for the selection of mentors. The mentors were trained properly so that they can meet the requirements of their team members.

C. DC Nourishment:

The CC team will meet twice in a week followed by online discussions. The CC team was allotted to solve the problems in Tutorial Hours, a software simulation project was given as collaborative work. Periodical quiz were conducted among the team members and between the teams. This promotes a good learning environment for the students and results are discussed.

4. Results and Discussion:

Only 48 of the 119 students participated in this DCN study project and others wanted themselves to keep away. The performance analysis of CC team members and other members are obtained and discussed as follows:

At the beginning of the semester, most students find it difficult to solve the problems in Tutorial hours. The comparison of performance of CC and Non members are shown in fig. 1. The results show a significant improvement in problem solving ability of students.

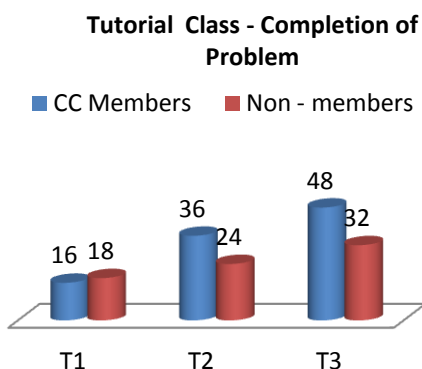


Fig 1: Performance of Students in Problem Solving

The result analysis of CAT exams is shown in fig.2. The CC team members perform better than the non members. The graph shows the result improved from 22% in CAT1 to 85% in CAT3.

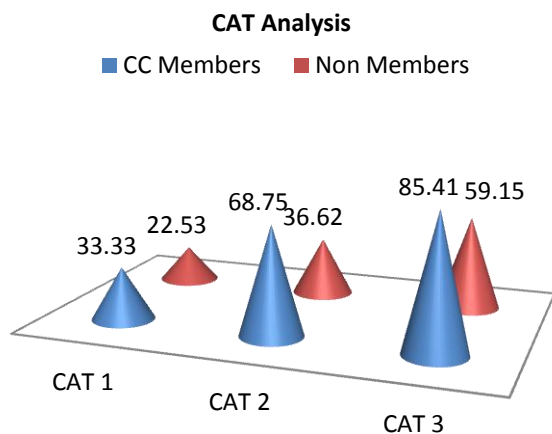


Fig.2 : CAT Result Analysis

Similarly, the end semester exam results were also found to be encouraging. Though the pass percentage of CC members are much higher than non members, the CC members scored better grades than non members.

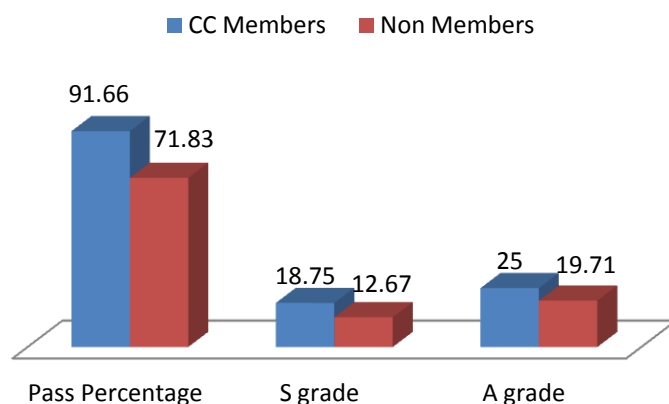


Fig. 3: Semester Result Analysis

The feedbacks received from the CC members are shown in fig.4. The four questions raised in the feedback are about:

- Q1: Problem Solving Ability.
- Q2: Confidence in Subject
- Q3: Solving Critical Issues
- Q4: Interpersonal Relationship

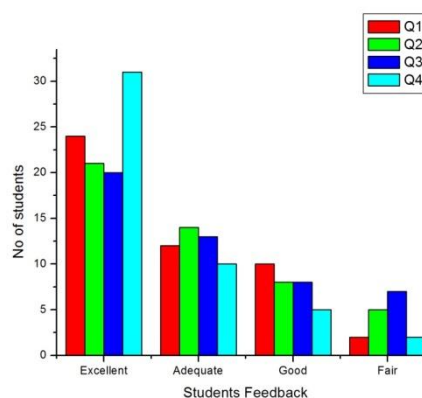


Fig.4: Feedback Analysis

Data analysis shows that more than 80% of students claimed that this approach was useful and 90% of students claim that this develops interpersonal relationship with their seniors. Hence, the introduction of DCN approach promotes self confidence, self learning, self reliance and interpersonal relationships. In addition the students who actively participated in the group score better grades when compared to others.

5. Conclusion:

The analysis shows that formation of CC team and effective implementation of DCN promotes a healthy learning environment. Though BCN is in practice in most of the institution, it is only an eventual development of the education system introduced during the colony rule. The

BSN methods need less effort but profitable. It fails to promote self learning and originality of the students. In contrary, the DCN method which was practiced in India even during vedic period is more effective and influential. Forming small groups lead by mentors helps the student to understand the concepts, to think critically and find suitable applications.

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