

HARNESSING MICROSOFT TECHNOLOGY TO IMPROVE THE QUALITY OF HIGHER EDUCATION

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Abstract: In the mid-1990s there was considerable growth in implementations of Enterprise Resource Planning (ERP) Systems for large corporations. With increase in affordability and need, Mid-market is a huge opportunity for ERP product and implementation vendors today. The growth in ERP implementations had a resultant impact on the demand for ERP skills. It is also well regarded within the Microsoft Dynamics channel that there is an acute global shortage of qualified Dynamics staff. ([Nigel Frank International](#)) Many universities have spent considerable time and resources in modifying their curriculum to incorporate Enterprise Resource Planning Systems (ERP) (Hawking, Shackleton & Ramp, 2001; Lederer-Antonucci, 1999; Watson and Schneider, 1999); however most universities have struggled in this direction. This paper is an effort to showcase innovative tools to effectively use Microsoft Dynamics in curriculum and share the results

Key Words: ERP, Simulation, DYNAA, Microsoft Dynamics

INTRODUCTION

Traditional pedagogical methods are still very much the custom within higher education. Student learning remains largely based upon take out knowledge from texts and lectures, or procedures based around the metaphor of acquisition (Sfard 1998). This style of teaching seldom gives students the opportunity to apply their newfound knowledge to actual situations, resulting in a serious time lag between students learning and applying new knowledge (Raymond 2010). As a result many students have trouble determining the relevance of what they are being taught, and thus lacking any obvious incentive to learn fail to truly engage with the learning process (Dorn 1989:6).



Gredler (1996) describes experiential simulations as complex environments in which the learner becomes a functioning element that influences experiences that may be too costly or dangerous to pursue in the real world. Specific domains of knowledge including affective, cognitive and psychomotor can be addressed in simulations which can help the learner develop decision making and problem solving skills as well as increase dexterity. For example, if we look at Hindu mythology which explains about experiential learning. Like “Gurukul”, The Vedic Schools (extending back to approx. 1000 B.C) gave much emphasis to close interactions between the *guru* (Teacher) and the *shishya* (Student) who lived under the same roof enjoying a symbiotic relationship The Hindu mythology (In epics like Mahabhaarata and Ramayana) describes the simulated learning technique that has been used to teach students at that time.



Here is an interesting pointer to Hindu mythology on simulation. Once a competition occurred between Lord Ganesha and his brother Skanda as to see who could circumambulate the three worlds faster and hence win the fruit of knowledge. Skanda went off on a journey to cover the world on his mode of transport, peacock while Lord Ganesha simply circumambulated his parents sitting on his mode of transport “Mouse”. When asked why he did so,

he answered that his parents Lord Shiva and Parvati constituted his world and was thus given the fruit of knowledge. As this story conveys that, Lord Ganesha actually did a simulation of world travel. On a lighter note, the same mouse exists for simulation in today's digital world. We can call him originator of simulation technique.

The present generation is technology-savvy. Students are cognitively more sophisticated and want learning to be fun, engaging, hands-on, challenging, interactive, empowering, and thought provoking. However, some educators continue to think of knowledge and learning in terms of textbooks – sequential, fact-based, and immutable (Balasubramanian & Wilson, 2005).

For example, Computer simulations can offer a high level of interaction that encourage the learner to discover, consider and interact with situational relationships and abstract processes that are not easily taught in a classroom environment. A study performed by the State University of West Georgia's teacher education program on the distance learning program found that the more interactive the learning the more the students considered the lesson effective and the better they scored on tests (Roblyer & Ekhaml, 2000). Simulations allow the student to visualize and investigate the behavior of complex models such as the Bill of material, cash flow analysis, Available to Promise (ATP). However, if the student has access to the model, the formal description in the textbook and a teacher to help guide them through the lesson, it will create a more conducive environment for embedding information (Holliman & Scanlon, 2004).

One of the most commonly used techniques has been active learning, which has been defined as, anything that involves students in doing things and thinking about the things they are doing (Bonwell & Eison, 1991, p. 2). One must learn by doing the thing, for though you think you know it—you have no certainty until you try. —Sophocles (495–406 BCE). “Genuine learning” is the result of the student's active engagement in the learning process and not merely their passive absorption of what is being taught (Alder, 1982).

Proponents argue that the incorporation of active learning activities (e.g. hands-on activities, role plays, group projects, peer-led learning, and simulations) better help an instructor. “Create a lesson plan that maximizes student learning, encourages critical thinking, aids information retention, and allows students to apply key concepts and knowledge gained through readings and lecture to real (or realistic) problems” (Raines, 2003, p. 432).

When we look the current teaching methodology at management institutions there is a gap between the theory and practical application. To bridge the gap a business school from a large, popular education group took a conscious call to introduce use of technology like ERP in to MBA curriculum. The institute allied with Microsoft Learning Partner Varnaaz, Bangalore to implement Microsoft Dynamics NAV in their institute. The objective of such innovative program was to:

- Acquire and install free competency center
- Association with Multinational Brand and
- Provide Experience of Real Business Processes by simulation.
- Provide opportunities for students to get into high growth careers.

A study was conducted on evolution of this training considering course content, pedagogy and effectiveness. Same is documented in this paper.

METHOD

Keeping this scenario in view, the business school decided to introduce training students on ERP using Microsoft product. Microsoft Dynamics NAV was chosen for this purpose and following were the five strong reasons:

1. **Free Competency center:** Companies invest Millions of dollars in implementing ERP and CRM software. BVB-MBA by signing up for Microsoft Dynamics Academic Alliance membership, Microsoft has sponsored free competency center of ERP and CRM. This also comes with free access to Microsoft's Studets2Business portal which provides a direct access for students to directly interact with business community for reasons like internship and jobs to participating in resolving real time challenges of business.
2. **Experience of Real Business Processes:** Most of the science courses starting from school have laboratory exercises attached to theory classes but interestingly MBA students get practical experience for the first time during their 6 weeks internship when they get to interact with live business. With Microsoft Dynamics Competency center, students can simulate required business processes by creating their own imaginary company, create set of vendors, employees and customers and understand how business transactions take place and how they impact different departments and accounts
3. **Tutorials make Data and Business Management more interesting:** The tutorials are conducted by industry experienced professionals who bring their wide industry experience into the class, which helps students understand the concepts and business processes more clearly. This type of tutorials help students not only in getting an insight about how a company works in real time and but also make them industry ready by the time they complete their graduation.
4. **Association with Multinational Brand:** Microsoft Dynamics Academic Alliance (DynAA) is a global program that provides no-cost licenses to educational institutions that want to use Microsoft Dynamics software for teaching or research purposes. DynAA is a powerful connector to the vibrant and growing Microsoft Dynamics ecosystem that includes nearly 300,000 customers, more than 10,000 Microsoft partners, and over 1,600 academic institutions. Students can acquire an additional certification from Microsoft to be called as Microsoft Certified Business Consultant.

5. Career Opportunities: Students get numerous career opportunities as an IT enabled management professional as well as Microsoft Dynamics consultant. A student can:

- Quickly raise to a successful manager by leveraging on IT tools to make business decisions
- Contribute their knowledge and talent to the businesses around the world
- Assess the needs of businesses to deliver software solutions that help them achieve real results
- Customize software solutions to help businesses streamline their processes and operate more effectively

PEDAGOGY

The Course pedagogy includes the following methods

ERP Game: Management game is often seen as a vehicle, which is used for helping to visualize and rehearse strategy in holistic approach. It makes it possible to sketch the organizational cause-and-effect relationships and to communicate more clearly with structures that translate decisions into actions (Morecroft, 1999).

The use of management games in business education has been documented through a series of surveys (Faria, 2001; Gilgeous & D’Cruz, 1996). Lainema and Lainema (2007) consider management game as one of the critical learning elements for advancing acquisition of business know-how. Connolly and Stansfield (2007) demonstrate the use of management games in e-learning. Benbunan-Fich (2002) and Hoffman (2003) show some statistics on the impact of using management games on education and training. Moores and Chang (2001) and Martin (2000) give examples of business games that are developed to support the teaching of management information systems. Stolk (2001) demonstrates the use of management games in crisis management. Doyle and Brown (2000) show how they use a business management game to teach applied skills and the benefits and the challenges of using student teams from multiple countries.

The ERP Game is a 2 days game divided into 2 sessions each day. In first session the narrator starts the game with few questions to the students regarding their career goals and their responsibilities in an organization. This discussion is basically focused on making the students realize their roles and responsibilities in an organization and information shared and connectivity among different departments. Once the students understand the importance of information sharing and roles and responsibilities the class will then be divided into 5 groups, each representing a department of a company (like Finance, Marketing, Manufacturing, Purchase & Warehouse and Human Resource). The group is divided in such a way that each group should have students of all the specializations like, Finance, Marketing, Human Resource, Banking and Operation. After division of the groups, the narrator explains about the company called P C Solutions Ltd.is which is into assembling of Personal Computers (*Appendix A*). The company profile will be distributed to the groups and once they understand the nature and working of the company the narrator will ask the group to list down the internal and external factors that can affect the working of the company. Internal factors like lack of finance, labor problems, lack of information and external factors like natural calamities, government stability, change in tax and financial policies. Once the group lists these factors they will present the same to the class for further discussion.

On second day the groups will be asked to act as an individual P C Solutions company like that the class will have 5 companies, now the groups are given with the figures about the company like number of goods in inventory, salary to be paid, prospect sales order, cash in hand, number of employees in organization and their salary details etc. (*Appendix B*). Then the narrator starts the game by giving them a sales order which need to complete on a specific date. Once the task is given, the groups are thrown with business challenges such as advance payment must be given to the vendor to purchase goods; unexpected strike by workers, natural calamities, strike by transport companies etc. and they are asked to come up with solutions to overcome the challenges. The narrator will act as an external organization such as bank, vendor or customer and help the groups whenever they have difficulty in taking decisions. Once all the challenges are resolved by all the groups the will be asked to present the solutions they have taken to solve the problem. This will help other groups to identify different solutions for a single problem.

Case Study on Business Process Cycle: Having students work through complex, ambiguous, real world problems engages students with the course material, encouraging them to “see it from an action perspective, rather than analyze it from a distance” (Angelo & Bohrer). Case studies are, by their nature, multidisciplinary, and “allow the application of theoretical concepts...bridging the gap between theory and practice” (Davis & Wilcock).

Likewise, the training sessions were based on providing case studies on demonstration of various Business Process Cycles like Purchase to Pay (P2P), Order to Cash (O2C), Hire to Retire (H2R), and Manufacture to Stock (M2S). A case study for each business cycle is created and mapped to Microsoft Dynamics NAV. The case study includes the description of the company and a story which explains about the one complete business cycle which will be practically demonstrated on Microsoft Dynamics NAV.

Assignments: Assignments include recap of the sessions take in a short case study form. The case includes practical work and generates some reports to take business decisions.

For example, being a sales manager, you want to promote a sales person who has performed well. Analyzing various reports from Microsoft Dynamics NAV, a student need to decide. In a real life scenario, a best sales person is one who not only achieves good revenue but with lower cost to company, lesser discount, adds new customers in addition to farming existing customers.

Quizzes and Online exams: “Simulation like questions are valuable for teaching management skills, instructional design and other competencies where rules of performance can be communicated clearly and concisely and where performers have time to think through their real world actions” (Will Thalheimer)

Quizzes are conducted after every session. The quiz paper contains 15-20 objective type and scenario based questions. These quizzes will help students to recollect the topics learnt for that session and scenario based questions will help them to apply the learning gained from theory and practical sessions.

Project: A project was given at the end of the course. The project demonstrates a small business case study which includes a brief description about the company and some practical problem to make them understand the practical application of all the topics learnt in the entire course (like sales cycle, purchase cycle, general ledger transactions and explosion of BOM). This project helps the students to understand the real time application of the lessons that they have learnt in the entire course.

Deploy students in Implementation Project: Interested students were deployed in an implementation project in one of Microsoft Partner firm. The tasks given to students were part of their live implementation project. The tasks like data requirement collection, map gap analysis, etc.

SME Conclave: “Learning is the process whereby knowledge is created through the transformation of experience.” (Kolb 1984:38) For example, Small and Medium Scale Enterprise Conclave were conducted every year in the institute where various small and medium scale industries are invited and the asked to share their experiences with the students.

The SME Conclave is a an ideal Win – Win Scenario, amidst the entire ecosystem comprising of:

- 1) The Industry
- 2) The student fraternity,
- 3) The Academic Institution and
- 4) the Implementation/learning partner.

In this 1 day workshop the Small and Medium sized companies are invited to the academic institution (the entire event is managed by the Students with just the keynote speakers being the onus of the Implementation Partner) and updated with fruitful sessions on IT Enablement to maximize growth and profits. Topics range right from Social Media Marketing, Advantages of Cloud computing, Maximising ROI with ERP etc.

The benefits of such conclave are:

- This helps the Industry get unbiased information on current trends in IT and also helps them scout for good talent to recruit from these colleges.
- The institution gets a brand makeover in the location and also amidst the Industry
- The implementation partner gets qualified leads on various IT projects that these industries might plan in the near future
- The Students have a real time experience in conducting corporate events and also have an edge over other colleges in terms of placements

RESULTS

Currently it is 3rd batch that is undergoing this course. A study was conducted on the three batches which are presented below:

HIGHLIGHTS FROM BATCH 1

About the course: In the first batch MS Dynamics was introduced as a value added program. It was 72 hours course introduced in 3rd semester which included modules like Finance, Sales & Marketing, and Supply Chain & Manufacturing. The software used is Microsoft Dynamics NAV.

Resource faculty: A senior ERP implementation consultant with more than 20 years of experience in ERP delivered the course

Contribution from Institute: Attendance for the course was made mandatory and 25% of weightage of CIE of ERP course (09MBAC305 - 2 credits) was given to the performance in this training.

Pedagogy: The teaching pedagogy is combined with lecture cum discussions, simulations & hands-on practical sessions on the product. The out of 72 hours 60 percent of the classes were theory and 40 percent were practical. During the theory classes trainer used quiz as a tool for recapitulation. The quiz was amongst the groups and scores were displayed on the board. These score were also accounted for evaluation. Students used to take this quiz seriously and participation was high. During the practical sessions, addressing the individual problems by the trainer was time consuming and students were losing interest. This difficulty was noticed and discussed the issue with HOD. After discussion, it was decided to introduce 2 tier system i.e. Train the Trainer. A group of 6 active students were identified from the class and the trainer trained them thoroughly. Then each trained student was attached 6-7 students. All minor problems were resolved by trained students and difficult ones were attended by the trainer. This process has made the students learning past and created interest in them.

Evaluation: A written exam was conducted with a set of objective and descriptive questions and also a viva-voce by two senior ERP professionals from the industry. As a part of continuous evaluation, quiz programs were conducted on every alternate day.

Overall Feedback:

Faculty & Course Effectiveness	Poor	Average	Good	Very good	Excellent
Encouragement provided to participate during the session	0%	8%	9%	45%	38%
Level of Personal attention given to participants	0%	8%	10%	35%	47%
Ability to maintain participant control	0%	9%	10%	44%	37%
Usage of practical examples	0%	8%	14%	37%	41%
Provision of guidelines for learning	0%	8%	12%	34%	47%
Interaction for Case Study (if applicable)	0%	6%	11%	40%	44%
Ability to complete the assessment after the course	0%	8%	13%	21%	58%
Duration allotted for this program	0%	6%	11%	34%	50%

Table 1: Feedback summary of faculty and course for Batch 1

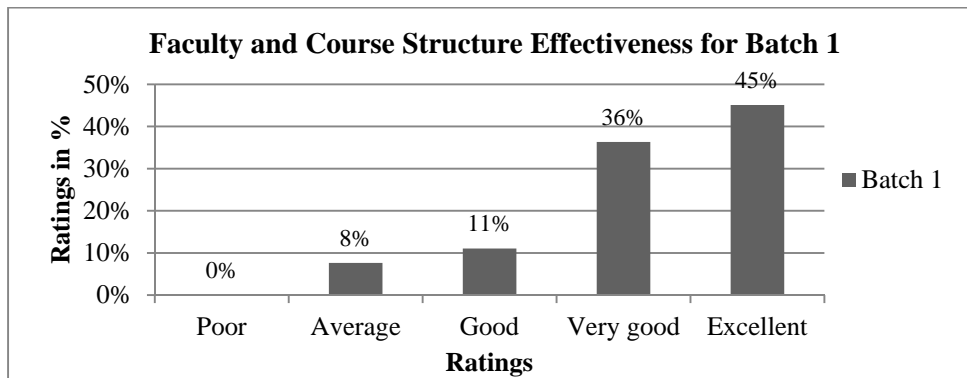


Figure 1 Feedback summary of faculty and course for Batch 1

Feedback was also collected from the students of same batch who have got placed in ERP. Here is the transcript of same

“The task of the excellent leader is to stimulate people to unusual effort. The tough problem is not in identifying winners: it is in making winners out of ordinary people”. I want to thank Varnaaz team for ERP Training program in our college. This training program made me think out of box. When I heard about ERP software I thought it’s only for technical students and I thought it’s not my cup of coffee. After his introduction session I came to know that it’s not only technical but also functional. And he told about opportunities in the India and in Abroad. How the companies are shifting to Navision and huge demand for Navision consultant who is having domain knowledge. This eighty hour course helped me to understand Microsoft Navision effectively. And I decided that day it’s my cup of coffee and started working on that with the help of Varnaaz team, I got placed in one of the fastest growing IT company in Bangalore. Once again with all my heart I thank you sir for your guidance and help.

July 6, 2011

Umesh_Kumar,

“Initially I was not interested in so thought technical area called ERP. As the day progresses I was very much shocked by knowing that ERP has got so much scope in present market. Team Varnaaz is excellent in delivering the subject matter and they have got so much experience and in-depth knowledge about the concept. From this I got so much exposure about ERP and started taking interest in it. And I sincerely thank team Varnaaz, because after getting exposure in ERP only I got placed in a particular field.”

July 5, 2011

Basavaraj_Kammar,

“Gratitude is not only the greatest of virtues, but the parent of all others”, with this quote I would like to thank Varnaaz for opening up the opportunities in ERP for me, Initially my plan was to get into finance domain, as I had no clue about other streams and of course where to start from. Then came the opportunity to attend ERP training sessions conducted in our college by Varnaaz, Bangalore. The training sessions prepared me for the jobs in ERP domain. This gave me an edge over others in the vicinity as none of the colleges in and around Hubli-Dharwar are giving such exposure to their students. The eighty hour course helped me to understand Microsoft Navision effectively (like, modules present in it, how transactions are entered etc.). Now, as more and more companies shift towards Navision, it will create a huge demand for students with knowledge of Navision, and I would like to tell all my student friends make best use of this unique opportunity.“

June 28, 2011

Naveen_kumar,

HIGHLIGHTS FROM BATCH 2

About the course: Considering experience and the feedback from previous year, BVB-MBA decided to drop 2 credit course of ERP because of duplication. The 72 hours training in one semester was very hectic and difficult to manage the schedule. Hence it was made spread into 2 semesters. It was 72 hours course was divided in to 40 hours which is spread in two semesters i.e. 3rd and 4th semesters as value added course only. Supply Chain Management was added to the course content.

Resource faculty: The course was delivered by two ERP implementation consultants having more than 20 years of experience in the industry. An additional junior faculty also was deployed to oversee the hands-on sessions and assignments.

Contribution from Institute: Attendance was made compulsory but importance for evaluation was not possible because of non-credit training.

Pedagogy: The teaching pedagogy combined lecture cum discussions, simulations, assignments& hands-on practical sessions on the product. The out of 72 hours 40 percent of the classes were theory and 60 percent were practical. Quiz sessions were conducted after every 6 hour session and assignments were given after every 12 hour sessions to the students.

Evaluation: A written exam was conducted with a set of objective and descriptive questions. No oral exam was conducted

Overall Feedback:

Faculty & Course Effectiveness	Poor	Average	Good	Very good	Excellent
Encouragement provided to participate during the session	0%	5%	30%	45%	20%
Level of Personal attention given to participants	0%	5%	32%	43%	20%
Ability to maintain participant control	0%	4%	42%	34%	20%
Usage of practical examples	0%	7%	30%	46%	17%
Provision of guidelines for learning	0%	7%	47%	25%	21%
Interaction for Case Study (if applicable)	0%	8%	21%	57%	14%
Ability to complete the assessment after the course	0%	4%	39%	38%	18%
Duration allotted for this program	0%	7%	43%	29%	21%

Table 2: Feedback summary of faculty and course for Batch 2

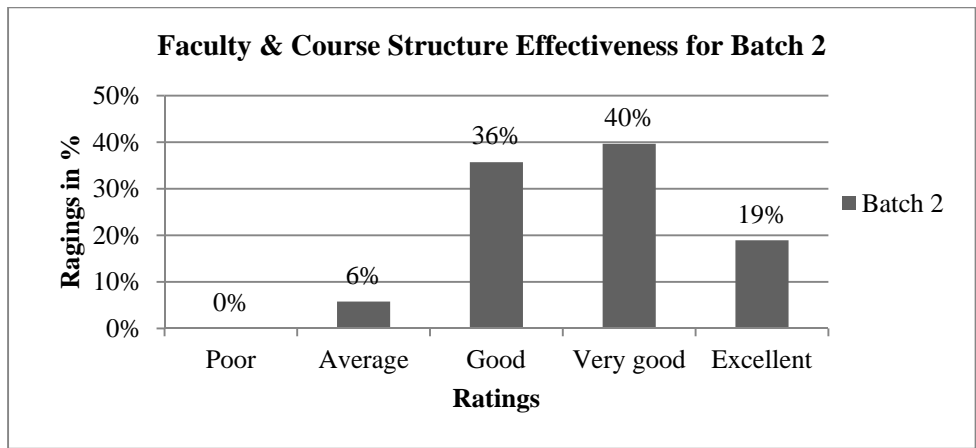


Figure 2: Feedback summary of faculty and course for Batch 2

Since assessment component was not attached any credits, students didn't take it serious and outcomes were not satisfactory.

HIGHLIGHTS FROM BATCH 3

About the course: Considering the feedback from previous year, the course was modified. The course is of 72 hours which was divided into 40 hours spread in two semesters. For this batch instead of 3rd and 4th semester the course was introduced in 2nd and 3rd semester. The course included Finance, Sales & Marketing, Supply Chain, Manufacturing and Human resource modules which will be taught using Microsoft Dynamics NAV.

Resource faculty: Currently the course is being delivered by an ERP implementation consultant with more than 20 years of experience in ERP delivered the course. An additional junior faculty is also being deployed to oversee hands-on sessions and assignments

Contribution from Institute: This training program was converted into a 3 credit course with required evaluation.

Pedagogy: The pedagogy combined lectures, discussions, simulations, case study and hands-on practical sessions on the product. Out of 72 hours 40% of the classes were theory and 60% were practical. Role play pedagogy was introduced, where students were divided into groups representing different departments like finance, production, procurement, sales & marketing and human resource of a company. A case study about a Bicycle manufacturing company was given to the students where they had to perform the certain tasks using the product. Tasks like tracking day today of the business for instance creating sales orders, purchase orders, making payments to the vendors, receiving payments from the customers, generate shipment invoices etc. which is a included as a part of practical sessions. They would also generate reports such as customer aging report, vendor aging reports, top 10 customer and vendor list etc. which will help them understand the business process more clearly and also identify the importance of reports in an organization. The case was developed through the research.

Evaluation: A continuous evaluation is being followed on a daily basis. A written and oral examination will be conducted for each semester followed by Microsoft’s certification exam which is being made mandatory. As a continuation evaluation program, we have introduced Question answer sessions in the form of quiz and Daily assignments. With these tools, each and every student would be rated with marks which would be consolidated into students’ marks sheet at the end of semester

Overall Feedback:

Faculty & Course Effectiveness	Poor	Average	Good	Very good	Excellent
Encouragement provided to participate during the session	0%	8%	9%	38%	45%
Level of Personal attention given to participants	0%	8%	11%	36%	45%
Ability to maintain participant control	0%	9%	10%	37%	44%
Usage of practical examples	0%	8%	14%	41%	37%
Provision of guidelines for learning	0%	8%	12%	47%	34%
Interaction for Case Study (if applicable)	0%	6%	11%	41%	42%
Ability to complete the assessment after the course	0%	8%	13%	58%	21%
Duration allotted for this program	0%	6%	11%	50%	34%

Table 3: Feedback summary of faculty and course for Batch 3

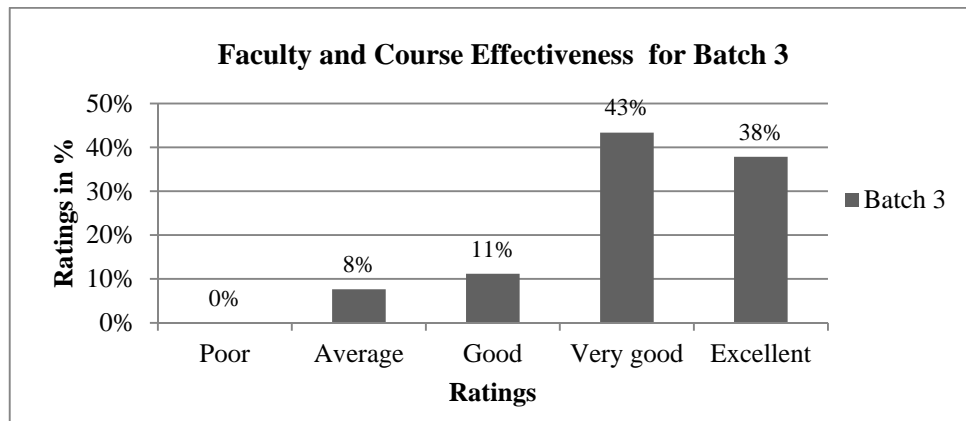


Figure 3: Feedback summary of faculty and course for Batch 3

Some of the key initiatives that are planned to be introduced during rest of the program are

1. Getting faculties involvement in delivering this program and make them use this technology to deliver their subjects
2. Introduce BVB’s faculty to some of the American and European business schools where such courses are introduced in their curriculum
3. Assist BVB-MBA placement team in building long term relationship with ERP implementation partners

CONCLUSION

BVB MBA	Content	Pedagogy	Assessment	Remarks	Feedback
Batch 1	Financials, Sales & Marketing and Manufacturing Modules	Train the trainer and 60% theory & 40% practical sessions	CIE marks was allotted to the course (25 marks)	Overall perception of the course was positive. It was considered as one of the unique programs which can grow as a vertical	81% of the class felt that the course was effective and delivery of lecture by the faculty was excellent
Batch 2	Financials, Sales & Marketing and Manufacturing Modules and a project at the end of the course	40% theory & 60% practical sessions	No assessment is being made	Since assessment component was not attached any credits, students didn't take it serious and outcomes were not satisfactory	70% of the class felt that the course and mode of delivery by the faculty was very good because of the project that has been added at the end of the course
Batch 3	Financials, Sales & Marketing and Manufacturing Modules and case studies for each module	40% theory & 60% practical sessions. Sessions are conducted using case study	The course is a part of curriculum with 3 credits assessment is made as per the requirements (40 marks)	Various steps to improve this course is taken including getting BVB faculty involved and realtime assessment of students	81% of the class feels that the course was very good and mode of delivery was excellent because of the case that was add in the course

Figure 4 Training method summary of 3 batches at Management Institute

Implementing ERP in curriculum is not uncommon at various universities but making it effective is more challenging. To make the implementation successful and effective we recommend the institutes to compliment the lectures with the activities like conducting quizzes, use ERP as a tool to simulate business processes, assignments, case studies, projects to bring in the participatory learning in the classroom.

APPENDIX

A. Case Study

P C Solution Ltd.

Profile

A noted business enterprise incorporated in the year 1998, offering assembled computers, laptops and services for a range of IT solutions in PC Hardware & Software.

The company undertakes Assembly of Personal Computers, assembly of laptops and also provides services like System Upgradation, Networking, Formatting, Software Installation, Virus Cleaning, and Repairs & Maintenance including Annual Maintenance Contract (AMC) of your Desk /Lap top computers.

They have the expertise in after sale/service of computer system. For accuracy in their products as well as services, they have a team of technical experts, which help them in providing efficient and reliable services to their clients. Their consistent adherence to quality standards and sincere efforts in all business activities have enabled them in achieving the trust of their clients who are spread across the globe.

Trade & Market

The company has its market spread over Asia and South America with an Annual turnover up to US\$ 0.25 million (or up to Rs. 1 crore approx.)

Team & Staff

The company is backed by trained team professionals who help them in fulfilling exact requirements of their clients. The team includes:

- R & D personnel
- Quality inspectors
- Technicians
- Engineers
- Sales & marketing executives

Total Number of Employees

25 People

No. of Research / QC Staff

5 People

No. of Engineers & Technicians

5 People

Quality Standards

PC Solutions follows strict quality control standards as per the guidelines of ISO 9000:2008. Their endeavor is to provide the best quality products and services to the esteemed clients. Each and every stage of the manufacturing process is carried out under the expert supervision of their Quality Controllers.

Rigorous test and checks at all levels ensures and enhances the reliability of the products. The team of quality inspectors conducts periodic quality check right from the procurement process to the final delivery to ensure consistency in quality.

Infrastructure

The infrastructure is spread over a large area and is divided into number of units such as manufacturing unit, in-house designing unit and quality testing unit. The manufacturing unit is equipped with all the necessary machines and equipment required for the production of electronic equipment.

The in-house designing unit is installed with CAD/CAM facility that helps in customize products according to client's requirements. Owing to their state of the art infrastructure, they have been able to meet the bulk requirements of clients with in limited period of time.

Services

PC solution Ltd. deals in **PC hardware, software and networking solutions**, which are used for both commercial as well as domestic applications. Their services are widely spread in all over India, Asia and South America. They provide services as per their client demand and specification.

Products Ranges

PC Solutions Ltd.'s ranges of products are popular for its quality, durability, reliability and much more. It includes:

- PC Assembly
- Computer repairs and Services
- PC Upgradation
- Networking
- Software installing
- Virus cleaning
- Repairs and Maintenance
- Annual Maintenance Contracts

B. PC Solutions Ltd. statistics used in ERP game

	COSTING	W1	W2	W3	W4	W5	W6	W7	W8
Computer Case	250	30							
Processor	2100	35							
RAM	500	40							
Motherboard	2700	40							
Hard Drive	2900	50							
Disk Drives	1300	15							
Monitor	3500	20							
Keyboard	75	60							
Mouse	100	45							
Power Supply Cable	200	25							
Cash in hand		700000							
Sales forecast(order in hand)				300 PCS (bill amt. 90 Lakhs)					
Receivables								30 L	50 L
Payables			Salary Due						

10 Assembly : 100000
 5 QA : 60000
 Temporary cost daily wage 600 per day
 HR 4 : 75000
 Procurement/ store 4 : 45000
 Management 4 : 200000
 Finance : 70000

C. Training Feedback Form used to collect students feedback

TRAINER FEEDBACK FORM			
Name			
ID			
Program Name			
Faculty		From Date	
Faculty ID		To Date	
Venue			

Faculty & Course Effectiveness	Poor	Average	Good	Very good	Excellent
Encouragement provided to participate during the session					
Level of Personal attention given to participants					
Ability to maintain participant control					
Usage of practical examples					
Provision of guidelines for learning					
Interaction for Case Study (if applicable)					
Ability to complete the assessment after the course					
Duration allotted for this program					

REFERENCES

Alder, M. J. (1982). *The Paideia Proposal: An education manifesto*. New York: Macmillan.

Angelo, T & Bohrer, J. (2002). Case learning: How does it work? Why is it effective? *Case Method Website: How to Teach with Cases, University of California, Santa Barbara*. <http://www.soc.ucsb.edu/projects/casemethod/teaching.html>

Balasubramanian N. & Wilson B. (2005). *Games and Simulations*. Retrieved April 15, 2009, from Society for Information Technology and Teacher Education: <http://site.aace.org/>

Benbunan-Fich, R. (2002). Improving education and training with information technology. *Communications of the ACM*, 45(6), 94-99.

Bonwell, C. C. (1996). Enhancing the lecture: Revitalizing a traditional format. *New Directions for Teaching and Learning* 1996 (67): 31-44.

Connolly, T. & Stansfield, M. (2007). From e-learning to games-based e-learning: using interactive technologies in teaching an IS course. *International Journal of Information Technology & Management*, 6(2-4), 188-207.

Davis, C. & Wilcock, E. Teaching materials using case studies. *UK Centre for Materials Education, Higher Education Academy*. <http://www.materials.ac.uk/guides/casestudies.asp>

Dorn, D.S., ‘Simulation Games: One More Tool on the Pedagogical Shelf’ *Teaching Sociology*, Vol.17, No.1, 1989, pp. 1-18.

Doyle, D., & Brown, W. (2000). Using a business simulation to teach applied skills - The benefits and the challenges of using student teams from multiple countries. *Journal of European Industrial Training*, 24(6-7), 330-336.

Faria, A. J. (2001). The changing nature of business simulation/gaming research: A brief history. *Simulation & Gaming*, 32(1), 97-106.

Gilgeous, V., & D’Cruz, M. (1996). A study of business and management games. *Management Development Review*, 9(1), 32-39.

Gredler, M. E. (1996) Educational games and simulations: A technology in search of a (research) paradigm. In, D. H. Jonassen (Ed.), *Handbook of research for educational communications and technology* (pp.521-540). New York, NY: Macmillan Library Reference USA

Hoffman, T. (2003). Simulations revitalize e-learning. *Computerworld*, 37(31), 26-27.

- Holliman, R. & Scanlon, E. (Eds.). (2004). *Mediating Science Learning through ICT*. New York: RoutledgeFalmer. Retrieved April 15, 2009, from Questia database: <http://www.questia.com>
- Kolb, D. 1984 *Experiential Learning: Experience as the Source of Learning and Development* Englewood Cliffs, NJ: Prentice Hall
- Lainema, T. & Lainema, K. (2007). Advancing acquisition of business know-how: Critical learning elements. *Journal of Research on Technology in Education (JRTE)*, 40(2), 183-198.
- Moore, T., & Chang, J. (2001). Flowers for the world: Developing a business game to support the teaching of IS concepts. *Proceedings of AMCIS 2001*, Boston MA, Retrieved October 3, 2008, from <http://aisel.aisnet.org/amcis2001/2>
- Morecroft, J. D. W. (1999). Visualizing and rehearsing strategy. *Business Strategy Review*, 10(3), 17-32.
- Raymond, C., 'Do Role-Playing Simulations Generate Measureable and Meaningful Outcomes? A Simulation's Effect on Exam Scores and Teaching Evaluations' *International Studies Perspectives*, Vol. 11, No. 1, 2010, pp.37-51.
- Raines, S. S. (2003). *The ISP Forum: Dialogue and debate* (Vol. 4, pp. 432–433). New York: Wiley - Blackwell.
- Roblyer, M.D. & Ekhaml, L. (2000). *How Interactive are YOUR Distance Courses? A Rubric for Assessing Interaction in Distance Learning*. Online Journal of Distance Learning Administration, Volume III, Number II. University of West Georgia, Distance Education Center. Retrieved April 15, 2009, from: <http://www.westga.edu/~distance/roblyer32.html>
- Sfard, A., 'On Two Metaphors for Learning and the Dangers of Choosing Just One' *Educational Researcher*, Vol. 27, No. 2, 1998, pp.4-13.
- Stolk, D., Alexandrian, D., Gros B., & Paggio R. (2001). Gaming and multimedia applications for environmental crisis management training. *Computers in Human Behavior*, 17(5-6), 627-642.
- Will Thalheimer, (2003), How simulation like questions can help replace expensive multimedia simulation, Presented at ASTD TechKnowledge. http://www.uwex.edu/disted/conference/Resource_library/proceedings/03_15.pdf