



**FACILITATING THE UNIVERSITY STUDENTS' SOFT SKILLS'
DEVELOPMENT TO SUCCEED IN THE
REAL-LIFE PROFESSIONAL CONTEXT**

Amali Dhanushka Weerakoon

Division of Polymer, Textile and Chemical Engineering Technology,

Institute of Technology, University of Moratuwa

Sri Lanka

amalidhanu22@gmail.com

ABSTRACT

It is the goal of every university to embrace a teaching method that allows the students to have enhanced soft skills together with the subject' hard skills. Employers often pay attention to soft skills as a way of identifying the potential candidates as they would be the ideal trainees. It is a well-known fact that traditional teaching methods such as lectures have a very poor effectiveness while providing minimum motivation or understanding of the demands of the corporate world. History says that poster presentations follow a real-life scenario: the conference format. This study was conducted to investigate the impact of a poster exhibition project towards the enhancement of the students' soft skills' development. For this study four consecutive annual poster exhibitions have been conducted as one month projects. Evaluation results of project throughout, from the researcher and the feedback from the students and the participated guests were analyzed according to descriptive statistics and secondary grouping. Results reveal that through the poster exhibition group project, the students were able to develop different types of soft skills including: team work, communication skills, presentation skills, interpersonal skills, organizational skills, problem solving skills, innovative and creative thinking skills and technical skills. Poster exhibition project can be explored as an effective student centered learning tool to enhance students' soft skills' development to progress them as professional experts in the real-life professional scenario. Poster exhibition project is a labor sensitive pedagogical approach. KEY WORDS: University students, Soft skills, Student centered learning, Professional environment, Poster exhibition project



INTRODUCTION

(1.1) The National Diploma in Technology

The corporate world is more competitive than it has ever been or thought and will continue to be one of rapid change. Hence, the aim of the Institute of Technology of University of Moratuwa (ITUM) is to produce technically sound, self-confident, flexible and internationally recognized quality diplomats who are able to realize their true potential by studying together and thereafter working together as professionals towards the development of our country. The National Diploma in Technology (NDT) course offered by the ITUM is a three year full time course with two years of academic work in the university and one year of industrial training. Industrial training refers to work experience relevant to professional development prior to graduation. The NDT diplomats are usually assured of employment in the category referred to as “Middle level Technologist” at the beginning of their career, both in the public and private sector in the traditional engineering fields of civil, mechanical, electrical, electronics and telecommunications, chemical, polymer, textile and clothing, marine and nautical studies and with further education and training, they can aspire to be engineers themselves.

(1.2) Polymer Engineering Technology students and their Industrial Training

All the polymer engineering technology students (PET) enter into the tyre industries for six months industrial training period and glove industries for another six months

period. During industrial training supervisions of the PET students in the tyre industries, the researcher was able to encounter that students are facing numerous challenges in competing with the industrial demands due to poor soft skills, even though they possess sound subjective theory knowledge along with good credits for the final year examinations. Students face a tough time in facing interviews, labor handling, working in teams to conduct research projects and presenting research progress to the top level management and to the foreign clients through video conferences.

(1.3) Soft skills

A skill is the learned ability to carry out a task with pre-determined results often within a given amount of time, energy, or both. People require a broad range of skills in order to contribute to a modern economy. Hard skills are any skills relating to a specific task or a situation and it is useful only for a certain job. They are easily quantifiable compared to soft skills which are related to one's personality. Soft skill is a sociological term relating to a person's "EQ" (Emotional Intelligence Quotient), the cluster of personality traits, social graces, communication, language, personal habits, friendliness, and optimism that characterize relationships with other people. Soft skills complement hard skills which are the occupational requirements of a job and many other activities. Soft skills are personal attributes that enhance an individual's interactions, job performance and career prospects. Unlike hard skills, which are about a person's skill set and ability to perform a certain type of task or activity, soft skills relate to a person's ability to interact effectively with



coworkers and customers and are broadly applicable both in and outside the workplace. An individual's soft skills "EQ" contributes significantly for the success of an organization. Screening or training for personal habits or traits such as dependability and conscientiousness can yield a significant return for an organization. For this reason, soft skills are increasingly looked for by employers besides to standard qualifications. Soft Skills are *behavioral* competencies. Also known as *interpersonal skills*, or *people skills*, they include proficiencies such as communication skills, conflict resolution and negotiation, personal effectiveness, creative problem solving, strategic thinking, team building, influencing skills and selling skills, to name a few. In other words it equips one with the abilities that one should possess.

(2) LITERATURE REVIEW

(2.1) Work place learning

Snoeck (1997 cited by Krishner 1999) says that there is a growing concern in professional contexts about performance levels of new recruits and existing staff. Krishner (1999) states that graduates of universities have the knowledge necessary to do the job, but lacks the higher order skills to do the job properly. Billet (2004) states work place learning is an active learning experience focusing student participation in situated work activities. Biggs and Tang (2007) stated that work place learning provides a teaching/learning situation where students learn through experiencing and active participation (usually under supervision) in various aspects of professional practice situated in the real-life professional context.

"If a practical end must be assigned to university courses, I say that it is that of training good members of society. A university degree is that the great ordinary means, to a great but ordinary end. It aims at raising the intellectual tone of society, at cultivating the public mind, at purifying the national taste, at supplying true principles to popular enthusiasm and fixed aims to popular aspiration, at giving enlargement and sobriety to the ideas of the age, at facilitating the exercise of political power, at refining the intercourse of private life. It is education which gives a man clear conscious view of his own opinions and judgments, a truth in developing them, an eloquence in expressing them, and a force in urging them. It prepares him to fill any post with credit, and to master any subject with facility. It shows him how to accommodate himself to others, how to throw himself into their state of mind, how to bring before them his own, how to influence them, how to come to an understanding with them, how to "bear" with them. He is at home in any society, he has common ground with every class; he knows when to speak and when to be silent; he is able to converse, he is able to listen."

John Henry Newman (1801 to 1890)

(2.2) Learning through collaboration and co-operation

Laurillard (1993 cited by Kirschner 2001) considered teaching to be a rhetorical activity, which seeks "to persuade students to change the way they experience the world. It has to create the environment that will enable students to learn the descriptions of the world devised by



others” and it is in essence, “mediated learning allowing students to acquire knowledge of someone else’s way of experiencing the world”.

“Collaborative learning is a personal philosophy, not just a classroom technique. There is a sharing of authority and acceptance of responsibility among group members for the groups’ actions. The underlying premise of collaborative learning is based upon consensus building through co-operation by group members, in contrast to competition in which individuals best other group members. Co-operative learning is defined by a set of processes which help people interact together in order to accomplish a specific goal or develop an end product which is usually content specific. It is more directive than a collaborative system of governance and closely controlled by the teacher. While there are many mechanisms for group analysis and introspection the fundamental approach is teacher-centered whereas collaborative learning is more students centered.” - Laurillard (1993 cited by Kirschner 2001)

Matthews (1995 cited by Kirschner 2001) that although there are differences, collaborative and co-operative learning share a large number of assumptions and areas of agreement. The commonalties are:

learning takes place in an active mode;

the teacher is more a facilitator than a “sage on the stage”;

teaching and learning are shared experiences between teacher and students;

students participate in small-group activities;

students must take responsibility for learning;

discussing and articulating one’s ideas in a small-group setting enhances the ability to reflect on his or her own assumptions and thought processes;

students develop social and team skills through the give-and-take of consensus-building;

students profit from belonging to a small and supportive academic community;

students experience diversity which is essential in a multicultural democracy.

Johnson and Johnson (1985 cited by Exley and Dennick 2005) considered the results of more than a hundred research studies of co-operative learning and concluded that there were several features that could be generally considered to improve the performance and attainment of students. These include;

high- quality reasoning strategies

constructive management of conflict

more elaborate information processing

greater peer regulation and encouragement of efforts to achieve

more active mutual involvement in learning

beneficial interaction between students of different achievement levels

feelings of support and psychological acceptance

more positive attitudes towards subject areas

greater perceptions of fairness of grading



(2.3) Group projects

Laird, Shoup and Kuh (2005 cited by Zhang 2012) said students engaged in deep learning have higher levels of intellectual development and satisfaction with higher education. Zhang (2012) stated to achieve deep learning; group projects are more effective than methods such as essay tests or multiple choice tests. Caruso and Woolley (2008) state that group projects can help students develop a host of skills that are increasingly important in the professional world. Astin (1997) stated that positive group experiences, contribute to student learning, retention and overall college success. Properly structured, group projects can reinforce skills that are relevant to both group and individual work, including the ability to:

- break complex tasks into parts and steps
- plan and manage time
- refine understanding through discussion and explanation
- give and receive feedback on performance
- challenge assumptions
- develop stronger communication skills
- tackle more complex problems than they could on their own
- delegate roles and responsibilities
- share diverse perspectives
- pool knowledge and skills
- hold one another (and be held) accountable
- receive social support and encouragement to take risks

develop new approaches to resolving differences

establish a shared identity with other group members

find effective peers to emulate

develop their own voice and perspectives in relation to peers

Biggs and Tang (2007:219) state that group projects are becoming increasingly common for two major reasons: they aim to teach the students cooperative skills, in align with Intended Learning Outcomes (ILOs) or graduate attributes relating to team work; and the teacher's assessment load is markedly decreased.

(2.4) Poster presentations

"A Poster Presentation is an experiential learning activity that stimulates curiosity and interest encourages exploration and integration of concepts and provides students with a novel way of demonstrating understanding." Handron (1994 cited by Cantrell and Wilkie 1998)

Biggs and Tang (2007:218) state that poster presentations follow a real-life scenario: the conference format. A student, or group of students, displays their work, according to an arranged format, in a departmental or faculty poster session. Brown and Knight (1994) stated that posters must be meticulously prepared. The specifications need to be very clear, down to the size of the display and how to use back-up materials: diagrams, flowcharts, photographs. Text needs to be clear and highly condensed.

"Of all the teaching strategies that I explored, the small group presentations



were in fact, the most successful. The strategy here was to supply each small group with either the same set of data and different tasks (in which case a full investigation of the data could be undertaken), or to give each small group a different set of data and the same task. Each group of students then worked through the data and was given a 5 minute slot at the end of the session to report back to the wider group on their mini project, the techniques they used and what they had found". Bramley (1996 cited by Exley 2004)

In this study, the researcher was mainly interested in exploring the impact of a poster exhibition project on the enhancement of the soft skills of the PET students to succeed in the real-life professional context.

(3) METHODOLOGY

For the study, a sample containing 24 PET students enrolled in their second year has been taken into account and the poster exhibition was organized from the syllabus content of DPT 207 / Polymeric Materials subject. Polymeric Materials subject offers 75% of the theory knowledge of tyre technology. Four consecutive poster exhibitions have been conducted on 01st of October 2013, 25th of November 2014, 20th of October 2015 and 20th of September

Figure 1 : Invitation cards

2016. The first task was the deciding a theme for the poster exhibition.

(3.1) Selection of a theme for the exhibition and topics for the individual posters

After having a discussion with the students a theme for the poster exhibition was concluded and the themes of the conducted four consecutive exhibitions were "Polymers", "Polymer Products", "Polymer Industries in Sri Lanka" and "Polymers in Automobiles". The 24 students were grouped into 12 groups of two students each. Each group was given topics for the individual posters related to the theme of the poster exhibition.

(3.2) Preparation of invitation cards

Students prepared a fascinating invitation card by decorating it with synthetic polymer pellets and by writing familiar polymer names on the card with a nice quote inside the card and invited the vice-chancellor and all the lecturers in the institute including director of the institute and heads of divisions, students from other fields and invited external guests including head of department of rubber research institute and the dean and the lecturers of department of polymer science of Sri Jayewardenepura university and the training officers in the tyre industries.



(3.3) Designing Posters

Two students were assigned to design one poster and during the project they worked together to search information from the lecture notes, text books and through the internet to design the poster. Then they exchanged their ideas and tried to create a better poster by gathering all the relevant

facts. Before prepare the original poster they had to submit the rough skeletons of the poster to the researcher and get the confirmation to design the proper one. Even though two students were assigned per one poster, they helped to other groups also by giving their creative ideas. Ultimately all the 24 students committed themselves as one group.

Figure 2 : Designing posters



(3.4) Preparation of the exhibition hall

Exhibition was conducted in the same lecture room and it was decorated and the oil lamps were arranged in beautiful way

and at the end of the poster sequence a small space was allocated to get the feedback from the guests.



Figure 3:Exhibition hall



(3.5) Poster exhibition day

Students presented their posters confidently to the guests after having the

inauguration ceremony. Some guests including the director delivered speeches on this occasion.

Figure 4 : Poster exhibition day





(3.6) Data collection tools

It was a one month project and the students were evaluated frequently according to a marking criterion contained attendance, information searching, creative thinking and design of the poster, meeting deadlines, presentation skills, support for the whole project and the marking was done according to the rubrics. On the exhibition day the students' poster presentations were evaluated by selected guests including training officers according to a marking criteria based on rubrics given by the researcher. After the exhibition project the students were asked to give written feedback on the poster exhibition project and they were asked to conduct a PowerPoint presentations based on the development of soft skills from this learning strategy. Based on the findings from the evaluation sheets, guests' feedback and the students' feedback and the PowerPoint presentations' results students were asked to respond for a close-ended questionnaire. In addition to the industrial training supervision reports and the oral feedback from the industrial training officers (12 Industrial Training officers from 12 industries), industrial training officers were asked to respond for a close-ended questionnaire after the completion of the students' industrial training period.

(4) DATA ANALYSIS

Guests' feedback and the students' feedback and the evaluation results of the researcher reveal that the poster exhibition project is an excellent student centered learning tool to develop soft skills enhancement of the students. Some of the comments from the guests are as follows;

"This is a real combination of the attitude of the lecturer and the attitude of the students"

"Excellent task to enhance students' English speaking skills and presentation skills"

"Great job while attending lectures"

"Should ask from other divisions also to take up this opportunity to develop the students"

"Perfect job has been done, Congratulations!!! To the lecturer and to the students!"

"A good way of developing presentation skills and language skills and communication skills"

"This is first time in ITUM"

"A good poster presentation with a very good sequence of posters"

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“Depicted all the important aspects of polymer technology”

“Definitely destined to improve learning process”

“This poster exhibition is the result of a committed teacher’s effort to get her students to learn more practically”

“Better way to develop team work skills”

“Understood that “We can’t survive without polymers”

“Impressed to see the enthusiasm of students who got involved and presented”

“Hope this will be made an annual event”

“Many others can consider this as a model for their work as well”

“There is an excellent bond between the students and the lecturer”

“Understood without polymers no automobiles”

“ Try to conduct this type of exhibition on the day of the NDT aptitude test to get more students for the Polymer division”

“Try to do this on the day of the aptitude test to give a wider knowledge of polymer field”

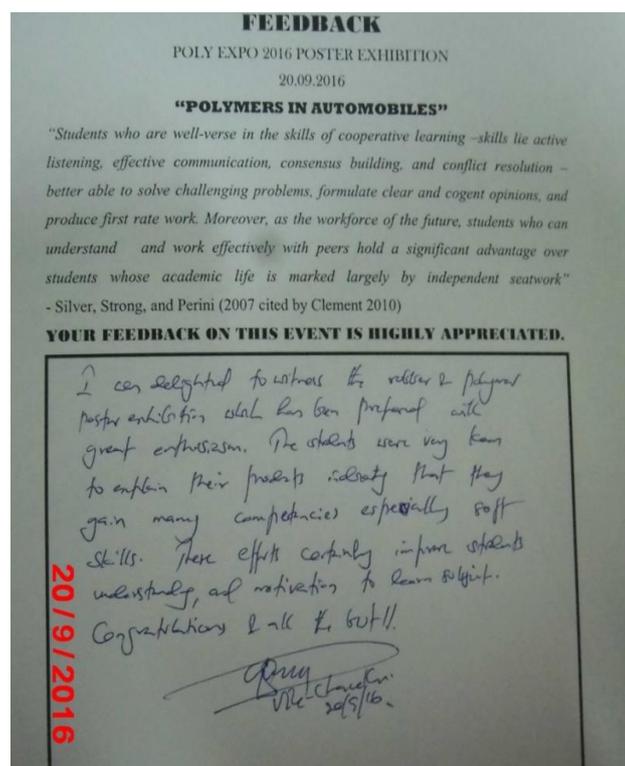
“Visitors gain insight knowledge of polymers”

“It was interesting to see videos along with the poster explanations”

“A big thank to the lecturer! You have motivated the students to bring out the best in them. So Well!!!!!!”

Honorable Vice-Chancellor sir's feedback is shown below.

Figure 5 : Honorable Vice-Chancellor sir's feedback



Some of the comments from the students are as follows;

“Thank you for giving this great opportunity”

“We were able to work as a team”

“Madam, during this period you were with us like a close friend, It was easy to work with you”

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“We are proud to give a proper understanding of our field to fellow colleagues”

“Remarkable period of time in my university life”

“An interesting change from regular lectures”

“I had participated for a lot of exhibitions, but this is the first time I performed as a presenter”

“ We had a great fun in addition to the development of presentation skills, language skills, communication skills, and personal skills and team work skills”

“When is the next exhibition?”

“It feels good to work with these wonderful friends, who has done their work more than 100%”

“Highly appreciate your dedication and effort”

“I wish you to have the strength to do this type of activities more and more”

This overall feedback reveals that from poster exhibition project students were able to develop many soft skills:

self confidence

self assessment

meeting deadlines

time management

project management

learning skills

Peer assisted learning

information skills

IT skills

language skill

presentation skills

creative thinking

active listening

intellectual interaction

assertiveness

communication skills

group work

co-operation

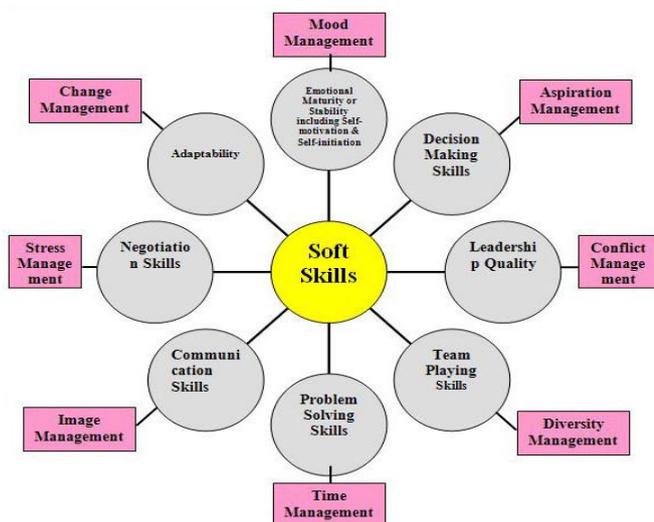
collaborative learning

personal grooming

social interaction



Figure 6 : Soft skills development through the poster exhibition



Source: <http://santoshrahul.blogspot.com/2012/11/what-are-soft-skills-and-why-are-they.html>

The soft skills developed by the students according to the guests' feedback and the

students' feedback and the evaluation results throughout the project from the researcher were clustered into the secondary grouping as mentioned in the Table 1.

Table 1: Summary of soft skills

	Type of Soft skills	Sub-component
01	Communication skills	oral presentation skills, social interaction
02	Team working skills	leadership, peer assisted learning, collaborative learning, intellectual interaction, delegating tasks, problem solving skills
03	Personal skills	self confidence, self assessment, creative thinking, personal grooming
04	Interpersonal skills	active listening, assertiveness
05	Organizational skills	time management, project management, meeting deadlines
06	Language skills	English speaking skill, English writing skill
07	Learning skills	reading skills, literature search and review



Students' responses for the close-ended questionnaire which was prepared according to the secondary grouping of soft skills is shown below in table 2.

Table 2: Descriptive statistics and frequencies (N =24)

Type of Soft skills	Descriptive Statistics			Contribution Frequency and Percentage				
				Scale (1-5) (Very Low satisfaction to Very High satisfaction)				
	Mean	Standard Deviation	Coefficient of Variance (%)	Very Low (%)	Low (%)	Moderate (%)	High (%)	Very High (%)
Communication skills	4.83	0.38	7.88	00	00	00	16.67	83.33
Team working skills	4.92	0.28	5.74	00	00	00	08.33	81.48
Personal skills	4.79	0.51	10.62	00	00	04.17	12.50	83.33
Interpersonal skills	4.92	0.28	5.74	00	00	00	08.33	91.67
Organizational skills	4.83	0.48	9.96	00	00	04.17	08.33	87.50
Language skills	4.92	0.28	5.74	00	00	00	08.33	91.67
Learning skills	4.67	0.64	13.65	00	00	08.33	16.67	75

All mean scores of the seven types of soft skills in Table 2 have values over 4.67 (above average) showing overall enhancement of the soft skills of the students. Highest mean scores (4.92) and the lowest standard deviation (0.28) was gained for the team working skills, interpersonal skills and language skills implies the development of oral presentation skills, social interaction, collaborative learning, intellectual interaction, English speaking skills and English writing skills through this activity.

Lowest mean score (4.67) and the highest coefficient of variance of 13.65 was gained for the learning skills shows the least improvement of reading skills, and the lesser desire for literature search and review through this learning tool compared to the other soft skills' improvement achieved.

After implementation of the poster exhibition project during the industrial training supervisions of the same set of students, the researcher collected the



industrial training officers responses to an close-ended questionnaire. Their responses

reveal an enhancement of students' soft skills through the poster exhibition project.

Table 3: Descriptive statistics and frequencies (N =12)

Type of Soft skills	Descriptive Statistics			Contribution Frequency and Percentage				
				Scale (1-5) (Very Low satisfaction to Very High satisfaction)				
	Mean	Standard Deviation	Coefficient of Variance (%)	Very Low (%)	Low (%)	Moderate (%)	High (%)	Very High (%)
Communication skills	4.75	0.62	13.09	00	00	8.33	8.33	83.33
Team working skills	4.83	0.39	08.05	00	00	00	16.67	83.33
Personal skills	4.67	0.65	13.96	00	00	8.33	16.67	75
Interpersonal skills	4.83	0.39	08.05	00	00	00	16.67	83.33
Organizational skills	4.58	0.79	17.30	00	00	16.67	8.33	75
Language skills	4.67	0.65	13.96	00	00	8.33	16.67	66.67
Learning skills	4.42	0.90	20.38	00	00	25	8.33	66.67

All mean scores of the seven types of soft skills mentioned in Table 3 have values over 4.42 (above average) showing overall satisfaction of the training officers regarding the performance of the students in the industrial training period. Highest mean scores (4.83) and the lowest standard deviation (0.39) and higher frequencies for higher satisfaction levels (83.33%) was gained for the team working skills and interpersonal skills further implied the students didn't face any struggling points while conducting research projects, labor handling and addressing day to day industrial problems. This observation clearly tells the enhancement of the students' soft skills like functioning knowledge, self regulated learning, peer assisted learning, active listening,

assertiveness proper time management, project management, intellectual interaction and the problem solving skills through the inspiration of the poster exhibition learning tool. Lowest mean score (4.42) and the highest coefficient of variance of 20.38 and the lowest frequency for higher satisfaction levels was gained for the learning skills showed the poor desire of the students in reading journals for literature search and review.

“Students who are well-verse in the skills of cooperative learning –skills lie active listening, effective communication, consensus building, and conflict resolution – better able to solve challenging problems, formulate clear and cogent opinions, and produce first rate work. Moreover, as the workforce of the future, students who can



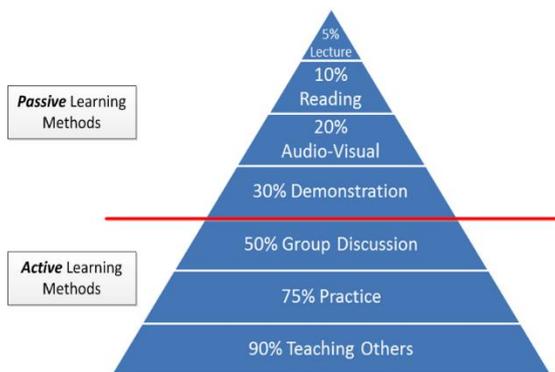
understand and work effectively with peers hold a significant advantage over students whose academic life is marked largely by independent seatwork”

Silver, Strong, and Perini (2007 cited by Clement 2010)

(5) DISCUSSION

The enhanced functioning knowledge of the tyre technology helped the students to succeed in conducting the research project. The learning pyramid which was developed by National Training laboratories in Betel, Marine explains the so called improvement nicely as follows.

Figure 7 : Learning Pyramid



(source:<http://networklessons.com/personal-development/how-to-study-cisco-and-networking/>)

The difference in retention of knowledge between passive and participatory (active) methods is due to the extent of reflection and deep cognitive processing. Reading the extra reading materials alone make them to have only 10% knowledge retention but it proceeded through the discussion (which lies in active learning methods) with the neighbor in buzz groups developed reading

activity then tend to enhancement of the knowledge retention 50%. And by poster exhibition students were able to enhance their knowledge retention up to 90% by practicing the "teaching others" technique.

“The best answer for the question, “What is the most effective method of teaching?” is that it depends on the goal, the student, the content, and the teacher. But the next best answer is, “students teaching other students. McKeachie (1998)

Figure 8 : Tuckman’s team developmental model



(source:<http://www.businessballs.com/tuckmanformingstormingnormingperforming.htm>)



As it shown above in the Tuckman's team development model, after receiving the information about the poster exhibition project students started to work as small groups containing two member groups at the beginning and with the time as one big group to make the event a success. In the learning group by solving all the conflicts, improving working relations with all throughout the project period everybody was fully engaged with the group and finally on the exhibition day they achieved the great success of the task.

According to the categorization of domains of learning by Benjamin Bloom in 1956, affective domain involves feelings, emotions and attitudes. Students were able to practice a lot on affective domain of learning through the poster exhibition learning approach. This domain is categorized into 5 sub domains, which include:

Receiving Phenomena: listening attentively to the group member

Responding to Phenomena: participating regularly in their own groups

Valuing: sharing ideas with the peers, assertiveness

Organization: after the agreement with each other in each group creates fruitful posters

Characterization: ultimately all the groups worked together as one group to success the exhibition

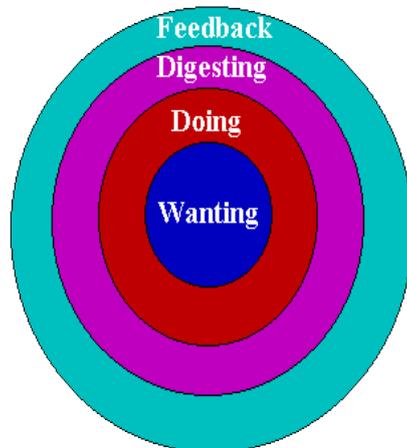
“Respect your fellow human being, treat them fairly, disagree with them honestly, enjoy their friendship, explore your thoughts about one another candidly, work

together for a common goal and help one another achieve it.”
Bill Bradley

As well students were able to reinforce Golman's five emotional and social competencies during this activity: self-awareness, self-regulation, motivation towards their goals, taking initiatives, empathy, social skills.

Designing the process of designing the posters the enthusiasm in students helped them to be more creative, aesthetic and reflective of what they were learning under polymeric materials subject so far. In addition to the researcher' regular evaluation, the experience of self- and peer-assessment also helped them learn from an assessor's perspective. According to Phill Race' ripples on a pond learning model, after getting motivated for the given topics the students designed the posters referring lecture notes, text books and the internet. Then they prepared for the poster by summarizing the facts. Once the students showed the rough skeleton to the researcher and to their peers, according to the given formative feedback they reflectively modified the posters and after digesting the actual design they came up with an amazing posters.

Figure 9 : “ Ripples on a pond learning model”



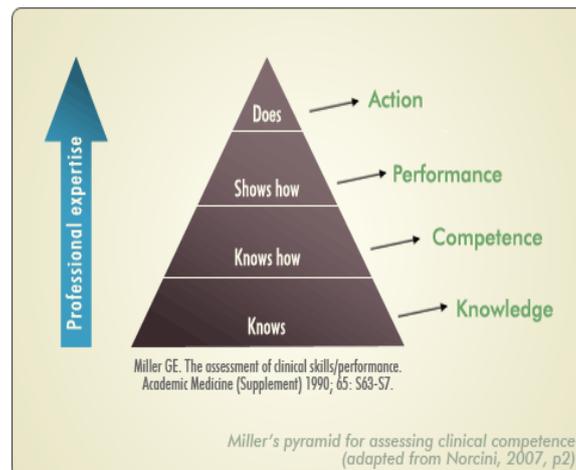
Source:<http://lifelongscotland.tripod.com/learning/styles.html>

These four processes in the ripples on a pond experiential learning model, rather than progressing through a cycle, they interact with one another like ripples in a pond. "... If students are to be encouraged to be lifelong learners, they must be weaned away from any tendency towards over-reliance on the opinions of others. Ultimately, in real world contexts, they must be able to judge or evaluate the adequacy, completeness or appropriateness of their own learning, so whatever assessment practices are used must be comprehensible to the learners so that they can be internalized as criteria for critical self evaluation."

(1994 cited by Boud and Falchikov 2006)

During the lectures students were informed that they should develop their soft skills to compete with the industrial demands. Then they got the knowledge of the skills and came to the "Knows" level of the Miller's Pyramid.

Figure 10 : Miller's Pyramid for assessing clinical competence



(Source:<http://www.faculty.londondeanery.ac.uk/e-learning/setting-learning-objectives/some-theory>)

By practicing so called soft skills during the preparatory period in exhibition, students achieved to the "Know how" level of the Miller's Pyramid. On the exhibition day, students were able to demonstrate a lot of so called soft skills to the guests. Then they performed the "Show how" level of the Miller's Pyramid. During the industrial training the students were able to challenge the professional competencies through the developed soft skills and came to the "Does" level of the Miller's Pyramid.

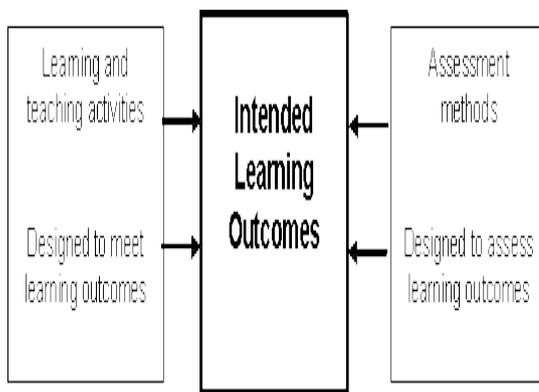
"Learning in a passive system has a much greater tendency to be both superficial and quickly forgotten. Active involvement in learning helps the student to develop the skills of self learning while at the same time contributing to a deeper, longer lasting knowledge of the theoretical material....[and] ...it is almost the only effective way to develop professional skills and to realize the integration of material from different sources."



(McGowan and Knapper, 2002, p.633)

John Biggs (Biggs, 1999) constructive alignment explains, through the poster exhibition project main intended learning outcome was the enhancement of the soft skills and as the results proved in above, the evaluation tools (feedback, regular evaluation sheets, questionnaires) were aligned to meet the ILOs.

Figure 11 : John Biggs constructive alignment

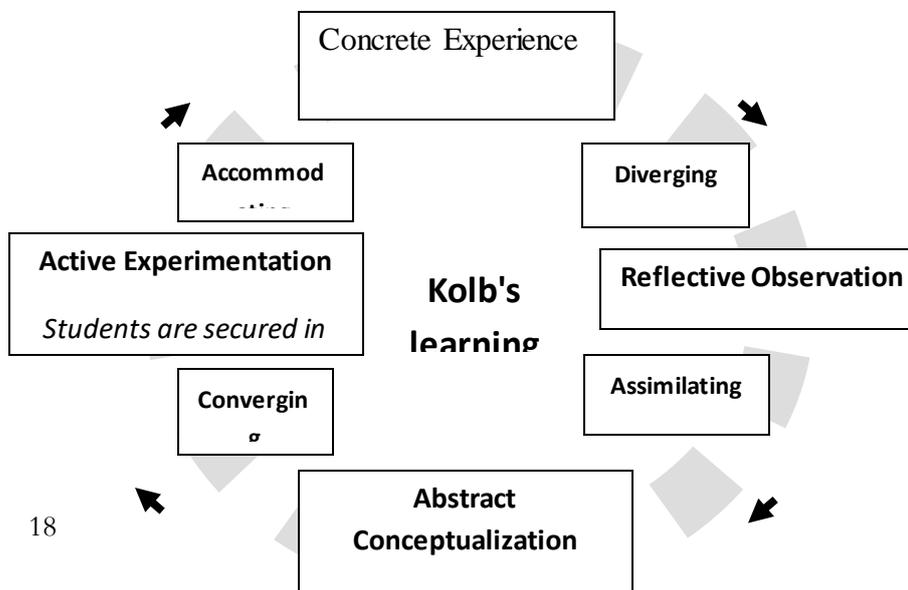


(Source: Aligning learning outcomes, learning and teaching activities and the assessment. Adapted from Biggs (1999) p 27)

According to the "3P" model developed by Biggs (2003) presage, process and product factors of the learning environment have a great influence on the student's success in the course. So the "Presage" factors to conduct a poster exhibition was the students' lack of soft skills to compete with the industrial demands. So the researcher tried to change the traditional teaching methodologies by introducing a new assessment technique, that was the conducting a poster exhibition which was the "Process" factor under 3P model. And finally this study emphasized that students were able to challenge the professional competencies through the reinforced soft skills.

Healey (2000) stated that learners should go through the Kolb learning cycle several times to succeed in their learning. Figure 12 shows the Kolb's learning cycle for reflection on the poster exhibition for the gradual development of the students' soft skills to meet the professional world competencies.

Figure 12: Kolb's learning cycle for reflection on the Poster exhibition



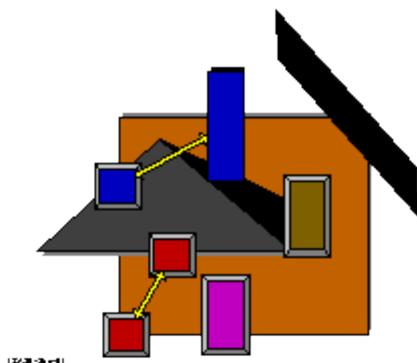
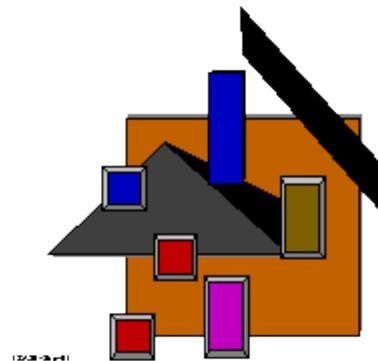


The SOLO taxonomy also describes this development of the graduate attributes. The SOLO taxonomy stands for: Structure of observed learning outcomes. It was developed by Biggs and Collis (1982), and

Figure 13 : Polymer Engineering Technology students are reaching to the extended abstract level of SOLO Taxonomy with the completion of the Industrial training

is well described by Biggs and Tang (2007). It describes level of increasing complexity in a student's understanding of a subject, through five stages.

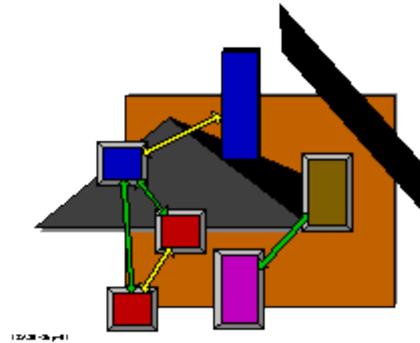
1Pre-structural: *Students learnt about the theory of dry rubber technology and the importance of the soft skills in the lecture room*



2Unistructural: *While doing practicals in the laboratory, students started to practice the theory of rubber technology.*



3 Multistructural: *Active participation for the poster exhibition project supported to enhance the soft skills necessary to work in the industrial scenario.*



4 Relational level: *At the beginning of the industrial training, students started to work confidently by conducting given research projects in the new environment without facing any difficulties.*

5 *At the extended abstract level :Students were able to successfully complete the industrial training and have developed their potential to design new innovations to practice as professional experts.*



(6) CONCLUSION

The researcher has tried to discover a way to bridge the gap between the university environment and the real life professional context to get rid of the difficulties faced by the students in the industrial training

period. The results of this study emphasizes the poster exhibition project is an excellent learning/teaching technique to develop students' soft skills enhancement to compete with the industrial demands confidently. Learning theories: learning pyramid, Phill Race' ripples on a pond



learning model, John Biggs' constructive alignment, Kolb learning cycle, Miller's Pyramid for assessing clinical competence and the SOLO taxonomy nicely explains the development of the students' soft skills like communication skills, team working skills, personal skills, interpersonal skills, organizational skills, language skills and learning skills. Even though poster exhibition project is a very labor sensitive pedagogical approach it has a marvelous potential of addressing a wide spectrum of cognitive, affective and psychomotor domains of learning. A poster exhibition project is an excellent student centered learning tool to enhance students' soft skills development prior to the industrial training or prior to the graduation to challenge confidently with industrial demands to encourage themselves to develop as professional experts.

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