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Collaborative Learning: An Action-research Intervention to Induce Relational Space among Employees

Shamaila Gull
Assistant Professor
Institute of Business and Information Technology
University of the Punjab, Lahore
Email: shamaila.gull@ibitpu.edu.pk

Abstract:

This action-research work aims to highlight the impact of collaborative learning on initiating and facilitating future collaborations among employees of an organization. The collaborative learning incorporated learning-history as a key facilitating tool for highlighting notable results and developing those into a shared future. The collaborative learning was co-designed with the OD department of a large Pakistani corporation and involved an all-day interactive workshop for middle level managers, the first of its kind with this employee population. The workshop helped reduce the relational barriers among employees and resulted in collective knowledge generation focused on conserving energy. The post-workshop feedback revealed the significance of collaborative learning in the form of more relational space, trust, openness and cooperation to support sustainability. The paper describes this intervention through different epistemological perspectives of action-research involving first, second and third-person research.

Keywords: Collaborative learning, action-research, relational space, sustainability, energy conservation, first-person research, second-person research, third-person research

I. Introduction

The study highlights the impact of collaborative learning on initiating and facilitating collaborations among employees and their importance when employees are brought into an organizational journey to sustainability. Building on an earlier Phase[1] with a Pakistani textile organization, I came to know that a crucial enabler for their successful strategy implementation was 'Training Programs'. These training programs were conducted on a regular basis at all hierarchical levels of the organization. In this regard, I also observed that employees at that organization speak highly about the training programs organized by the organization; they appreciated the consequent knowledge sharing through such programs.

[1] The phase 1 comprised of writing two independent comprehensive case studies on the sustainability journey of sustainability leaders located in Pakistan.

The learning of the earlier Phase case study provided us with an idea of extending our observations into a more active engagement in a later Phase[2]. Additionally, Phase 2 offered the opportunity to study how training in a collaborative mode can actually help in implementing organization-wide strategies such as Sustainability. However, I knew it was important to have the idea be developed & advanced by those inside the organization, for fit and value, as suggested by the Action Research (AR) orientation (Kemmis & McTaggart, 2007). Thus, we considered how to design 'Training' in the spirit of 'Collaborative Learning', a set of deliberate interactions among people to trigger some mechanisms (Dillenbourg, 1999). Together with the OD department we believed that the application of this collaborative learning could support their efforts with regard to sustainability. Moreover, this could be interesting from a scholarly perspective and also, significant especially in Pakistan's (a developing country) context where training is mostly considered as a bi-product of business activities and where collaborative learning is, almost, a non-existent notion much less an action learning practice.

A. Building on the OD Practices towards Collaborative Learning

The initial discussion with the (female) In-charge of Talent Development (a section of the firm's OD department) revealed that the organization offers collaborative/experiential learning programs only for the top management. These programs include semi-structured learning content that encourages interactions among trainees to facilitate a mutual learning process in a living situation. For the middle and lower levels of management, a more traditional mode of lecture based training is still in place in the form of one way communication. Its primary purpose is to keep the employees up-to-date with organizational objectives through a structured form of learning.

As I began to develop my case study, I learned of a change in training methods for middle level managers, namely the introduction of collaborative / experiential learning programs of which the company had conducted 2-3 training sessions already As the OD department was already trying to diverge from their existing training methods, therefore, the idea of my helping to conduct an action research project involving collaborative learning practices for middle level managers was appreciated by the partner company. Hence, we decided to collaborate in developing and implementing a Collaborative Learning Approach for middle level managers with an aim to lower the relational/interpersonal barriers among the participants in future and to do so in the context of developing knowledge about sustainability issues at the company.

B. Integrating Sustainability Context

According to the definition presented by the United Nations Brundtland commission, sustainable development means "meeting the needs of the present without compromising the needs of future generations" (World Commission on Environment and Development, 1987). The concept of sustainable development is a convergence between the three pillars of economic, social and environmental protection. The sustainable development strategies and practices adopted by the corporate world to contribute in the

[2] The Phase 2 involved an action-research based intervention in one of the two organizations involved in phase 1. The purpose was to address an organizational issue by working with practitioners as co-researchers resulting in practical outcomes for both the researcher and practitioners.

world's sustainable development are known as *Corporate Sustainability* (Elkington, 1994). Through corporate sustainability, business organizations contribute globally in creating economic, social and environmental values for a safe living on this planet. That is why; the organizations around the globe are striving to create new business models by collective knowledge generation for achieving the sustainability goals.

The discussion with Head of Environment, Health & Safety (EHS) department revealed that the company's main focus is adopting multiple energy conservation (environmental pillar of sustainability) methods in their business practices. According to EHS head, an action research project of collaborative learning might help to engage the middle level managers in conserving energy through their diligent practices for environment safety. By connecting the OD department with EHS, we moved to design collaborative learning process to create mutual benefits. The objectives of the study were as follows:

- To introduce a collaborative learning session as a potentially effective way of learning for middle level managers.
- To initiate future collaborations among employees in facilitating sustainability implementation.

The outcomes would be: 1) An actionable practice for continuing sustainability implementation and 2) reflecting on the value of this work within the context of Pakistani organizational practices.

C. A Brief Overview of Company

My partner company is one of the world's largest hosiery manufacturers with annual profit exceeding $250 million. It is an unlisted public company with majority shares owned by one family and currently has more than 13,000 employees. The company is considered as a progressive organization in the local textile industry of Pakistan with an impressive international clientele. The organization is also recognized as a sustainable organization among its stakeholders due to its efforts for creating sustainability values. Renewable energy sources, waste management, waste water treatment, health and safety, emissions control and education projects are few important examples of sustainability values created by the organization. In this regard, enhanced employee engagement is facilitated by frequent and intense training programs at all hierarchical levels of the organization. These training programs are helpful in spreading the knowledge of sustainability practices to a larger community for having common good for the society and environment, crossing the organizational boundaries. My case study revealed that collaborative learning might be useful especially at middle and lower ranks of employees; people who are directly involved in organizational operations.

II. Research Method and Questions

Beyond understanding the company's efforts at sustainability through a case study, our embrace of an action research orientation signaled a desire to support sustainability efforts. AR requires trust and collaboration between the researcher and the practitioner to make the research/inquiry successful (Bradbury, 2015). "Building democratic, participative, pluralist communities of inquiry is central to the work of action research; action research is only possible with, for, and by persons and communities for political, moral, and epistemological reasons" (Reason, 2006). During the writing of the

case study, I had developed a relationship with my partner company which took almost 2 years. Frequent and cooperative interactions with the company representatives had enabled me to establish a relational space; "a rich context for aspirational trust and reflective learning, which gives rise to collaborative projects" (Bradbury, Lichtenstein, Carrol, & Senge, 2010), for the collaborative work with my partner company. These interactions strengthened the mutual trust between us and ensured the participation of company employees as co-researchers to make this project a successful action-research intervention. In-short, the whole participative intervention enabled me to work with people rather than simply studying them through a conventional mode of research.

It is worth mentioning here that introducing collaborative learning as a post-conventional learning method (Barker & Torbert, 2011) is a big leap from the training and development perspective of the local Pakistani textile organizations. My interactions with the local industry in past two to three years have revealed that organizations still consider training and development as expenditure rather than investment. Organizations in local textile industry are inclined to provide only technical trainings to their employees to ensure profitability for their investors. This economistic behavior of the industry has perhaps marginalized the importance of adopting advanced learning methods required for generating and sharing the knowledge for common good. For this reason, my partner company is considered to be a highly progressive organization in local industry for voluntarily adopting and implementing modern and sustainable ways of doing business with a special focus on empowering the employees with advanced knowledge. Original research questions were co-designed for this action-research project based on my initial thoughts and discussions:

- How can an organization design a collaborative learning session / program as an effective way of learning?
- How does collaborative learning session impact the future collaborations among employees to facilitate sustainability implementation?
- How does collaborative learning among middle level managers facilitate the effective sustainability implementation?

These research questions were answered in three stages during the intervention:

- Designing the collaborative learning session / program.
- Application of this collaborative learning program on a group of people, comprising middle-managers, by conducting a one day workshop.
- Getting three feedbacks from the participants: 1) instant feedback by the researcher 2) survey by OD department 2) telephonic feedback from the participants three weeks after the application of program.

Moreover, writing this paper while highlighting the actionable learning both for the partner-company and researcher also provides answers to many potential questions of a wider community interested in action oriented interventions for effective sustainability implementation.

A. Understanding Action-Research through its Underlying Principles

The design was informed by the principles of action-research. Similar to qualitative research where both the methods focus on local knowledge of practitioners,

action-research is research 'with' practitioners (Bradbury, 2010). Unlike qualitative research it goes beyond merely understanding up to the practical outcomes for the real-time issues under study. This critical difference makes action research unique in a way that it combines the research and practice, thus, creating a synergy. Avison, Lau, Myers and Nielsen in 1999 described this difference: "Action research combines theory and practice (and researchers and practitioners) through change and reflection in an immediate problematic situation within a manually acceptable ethical framework". Thus, we saw that AR provides a context for the co-creation of the solutions for the problems faced by the practitioners. These co-created solutions developed by both the researchers and practitioners enable the organization to benefit from the outcomes of a research activity that aim at practicality. This practicality is made possible through the underlying principles of action research which were to be used to develop the collaborative workshop as a key intervention:

- Grounded in lived experience
- Developed in partnership
- Addressing significant problems
- Working with, rather than simply studying, people
- Developing new ways of seeing / theorizing the world
- Leaving infrastructure in its wake (Bradbury & Reason, 2003).

Moving further to make use of these principles in practice, 'learning history' was adopted for its ability to make use of case study material by inviting stakeholders to discuss what has happened and what do we want to have happen in the future. Learning history is defined as *"a practice of action research aimed at documenting notable results so that collaborative groups and networks may develop work further"* (Bradbury, Roth, & Gearty, 2015). This action research practice enabled the participants of the study to reflect upon the past by learning the specific history of their organization and resulted in an actionable understanding for a better future, as depicted in the later sections of this paper.

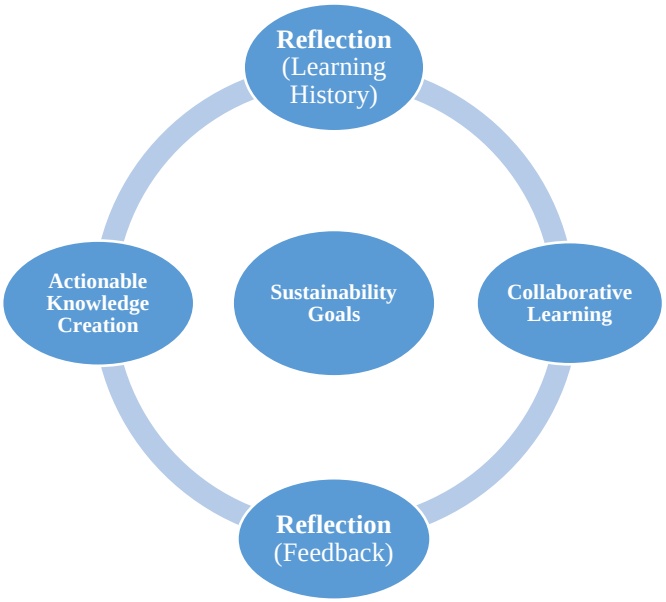
Importantly, action research seeks to integrate different epistemological perspectives i.e. first, second and third person inquiry (Chandler & Torbert, 2003). First-person inquiry is considered to be "a reflexive approach to life and to one's own participation in research and learning" (Marshall, 2016). It provides an important basis for inquiring into one's own engagement and learning during the course of action research. Second-person inquiry focuses on a mode of inquiry that involves others and consciously learning together, while the dissemination of knowledge generated to a wider audience or social network is called third person inquiry (Hynes, 2012). Third-person inquiry is important for better decisions and policies through future reflections of practice-based research held in past.

The idea of collaborative learning is supported by action research where practitioners and action researchers learn from each other by focusing on real-life issues faced by an organization. Action research allows the collaborative learning through *partnership and participation* which refers to the quality of relationship researcher and practitioner/stakeholders have to generate the practical knowledge about a real-life contextual issue (Bradbury, 2010). The collaborative learning is, however, defined *as "an*

umbrella term for a variety of educational approaches involving joint intellectual effort by students, or students and teachers together" (Smith & MacGregor, 1992). According to Smith & McGregor, the task of the learning groups is to create a clearly defined outcome by mutual participation in the process, thereby, learning from each other's work. In a corporate context, this learning metaphor i.e. collaborative learning has been adopted by replacing the student groups with researcher and practitioner where both collaborate to produce an actionable knowledge to resolve real-life organizational problems. The collaborative learning / inquiry provides a highly effective strategy for facilitating learning from experience through its structure for combined participation (researcher and practitioner), multiple ways of knowing and systematic validity procedures (Kasl & Yorks, 2002). Moreover, the process of participation can create awareness in people of their own resources and surroundings for their independent development (Hall, 2001).

In sum, the workshop was designed by adopting the principles of action-research to encompass the environmental pillar of sustainability with a specific focus on energy conservation. The significance of energy conservation is well learnt on a global level as it accentuates: 1) less dependence on non-renewable energy sources such as fossil fuels and 2) environmental protection; for instance, avoiding carbon emissions that are released into the air by burning fossil fuels (Audet, 2015). Therefore, it is not only important to conserve the energy but also to find better solutions for healthy living of future generations, hence, the integration of a learning orientation is significant. Figure 1 is the proposed framework of action-research for this study. In the next sections, action-oriented intervention for applying the above mentioned framework will be explained through first, second and third-person research. The explanation will help the readers to understand the different perspectives of action-research through a practical example.

Figure 1: Framework for Action Research



B. The Intervention --- Second-Person Research

The intervention or second-person research / inquiry, developed with the (female) OD lead and EHS department, was applied in three stages to respond to the co-generated research questions of the study. It is worth noting that voluntary participation of the middle managers and confidentiality concerns were ensured before the workshop (showing concerns for empowerment and trust) in the form of a consent document (Appendix I) to avoid any pressure on participants. The stages of the workshop are as described below:

Stage 1: Designing the Collaborative Learning Program

The reflections from the case study along with an understanding of the existing knowledge of organizational employees about sustainability helped me to design a collaborative learning practice for middle managers of the partner company, regarding sustainability. The practice was developed in collaboration with the members of organizational development (OD) department who were responsible for organizing and facilitating training and development activities at the organization. This learning practice was designed to particularly address the energy conservation issue in a lived manner, thereby, providing an opportunity to the participants to reflect on the past with the help of already provided case study on their organization and generate actionable knowledge for future purposes.

In addition to the case study, the workshop design also involved two small videos encompassing and highlighting the importance of energy conservation in our daily lives both at home and workplace. My further interactions with the company representatives led us to design another activity for the workshop in which participants could self-identify the locations within the organizational premises where energy was not properly conserved and needed solutions. The complete design of the workshop was co-created keeping in view the basic purpose of generating practical knowledge through collaborations among the participants.

Stage 2: Workshop

A full-day workshop was conducted as an action-research intervention in collaboration with my partner company consisting of 15 participants from different departments of the organization. The participants' sample was chosen by OD department from the middle level managers of the organization who had an effective role in implementing and achieving the sustainability goals for the organization. The workshop was conducted in three modules consisting of: 1) learning-history case study 2) videos and drawings 3) self-identification (taking pictures). Moreover, as facilitator I divided the participants in three groups with 5 members in each group. The members were rotated among groups before each module in order to initiate effective collaborative discussions and break the interpersonal barriers among the participants.

The first module involved learning history as an action-research approach by using organization's case study as a building block for further discussions among the participants. The case study was provided to the participants one week before the workshop for their comprehensive understanding and reflection. Activity based handouts from the case study were provided to facilitate the participants to shed light on sustainability related contributions of the organization along with basic understanding of the sustainability concept with a specific focus on energy conservation. The mutual

discussions of members within the group and then with other groups in an open manner served the purpose of having collaborative session grounded in lived experience.

The second module further reinforced the concepts of sustainability and energy conservation by showing two small animated videos to the participants, on the said concepts. The information gained was then openly discussed by the participants with a purpose to share the individual understandings for a collective knowledge generation. The participants' groups were then asked to draw their perceptions of sustainability with a focus on energy conservation by using drawings as a creative way of expressing their learning. These drawings proved to be a successful tactic in not only engaging the participants but also in initiating the critical discussion among the participants while explaining their drawings later at the end of second module. Again, this critical discussion not only enhanced the awareness among participants as how to effectually conserve the energy but also paved a way to learn from each other in a different frame of thought. I had been facilitating the whole discussion while ensuring a fair opportunity for every participant to share his / her experience and learning with others.

The third module addressed the impediments of energy conservation with direct identification of locations and respective solutions. For this purpose, I asked the participants to take pictures of different locations within their organizational premises where they find improper or less effective energy conservation. The participants were advised to use their own smart phones for taking pictures in order to safeguard the privacy concerns of the organization. Participants moved in groups and took pictures where they could identify the energy wastage due to any reason. The pictures were then shared among the participants for their deliberations and potential solutions. Here, different solutions were suggested by the participants based on their past experiences and knowledge to reduce the energy wastage to minimum. This knowledge sharing by the participants became new learning for many others for their future consumption.

I asked one of the participants, who belonged to Energy Cell, to take notes of the locations identified along with suggested solutions for further deliberations and collaborations among related departments of the organization on the said issue. The real-time intervention on the issue of energy conservation, which is of concern to a wider community, not only involved the participants to a greater extent but also led them to generate actionable solutions to improve energy conservation at their organization.

The workshop was, thus, the heart of our learning intervention to fulfill the criteria of a collaborative interaction: a) interactivity ---influencing each other's learning b) synchronicity --- doing something together c) negotiability --- mutually agreed view (Dillenbourg, 1999) leading to collective knowledge generation. This co-designed intervention may lead to strong social grounding if persistent and continuous efforts are done to develop a comprehensive collaborative learning system.

Step 3: Evidence of Success: Getting Feedback

Three sets of feedback were taken from the participants in order to understand the effectiveness of collaborative learning practice that I had co-designed with my partner company. These feedbacks were important for understanding as to what extent the objectives of the study were met and how much possibly the research questions could be answered. Feedback included:

- Instant feedback by the researcher on four dimensions:
    a. It was a collaborative / interactive session
    b. It was an effective way of learning for the participants
    c. The participants felt engaged in mutual learning process
    d. It increased the awareness of participants regarding sustainability and energy conservation

This feedback was taken on the chart paper which was then signed by all the participants with their open consent. The purpose of this feedback was to capture the immediate impression of the participants about this collaborative learning process.

- The OD department administered a feedback survey from the participants at the end of the workshop. This survey encompassed the following aspects for evaluation:
    a. Facilitator
    b. Course's effectiveness
    c. Recommendations for future
    d. Overall impact
    e. Overall effectiveness of program

The results of survey (Appendix I) were highly positive on all the dimensions, thus, reinforcing the open feedback that I took on the chart paper. All the aspects were rated at Excellent or Good on the five point scale. The above mentioned two feedbacks successfully addressed the first research question of the study, thus, proving that collaborative learning sessions can be an effective way of learning for middle managers at organizations. Such learning sessions not only provide an opportunity to the participants to interact with each other but they also enable the concept of mutual learning by sharing experiences and skills.

- Finally, a round of telephonic feedback was sought from randomly chosen sample of one-third participants. This feedback was designed to be taken after 3 to 4 weeks of conducting the workshop, with prior knowledge and consent of OD department, with the purpose of answering the other two research questions. These interviews led me to understand that:

    a. All the participants of interviews advocated for the value of such collaborative sessions seeing them as potential sources of increased cohesiveness among the participants as it provides an opportunity to reduce the interpersonal barriers among the employees working in different departments of same organization. Moreover, it creates an openness to know each other for future interactions.
    b. One of the participants said that the interactive learning process has offered a platform to share the old experiences of some to become new learning for others. He continued his feedback by saying, "I realized the importance of collective knowledge and therefore, shared my learning of workshop with my colleagues as well as my neighbors to save the natural resources from depleting".
    c. The teamwork during the workshop was also much appreciated by all the respondents of the telephonic survey. They opined that by working in teams

they have realized how to strengthen each other's ideas on energy conservation through mutual discussions and collaborations.

d. "We met people from energy cell and came to know what they are doing in the company to conserve the energy. My division has started interacting with energy cell as we now know who is there to guide us on issues. We have interlinked system so such collaborations help a lot in addressing combined sustainability goals", said one of the respondents who belonged to another division of the company located in a different city. This feedback provides an evidence of further collaborations among employees of the partner company with less interpersonal and departmental barriers.

e. The respondents agreed that such interactive learning sessions would be an important source of future collaborations among people from different departments for result-oriented efforts in saving energy. Sharing the summary of locations by the energy cell person, identified during the third module of the workshop, was also an initiative in this regard.

The above mentioned key responses are significant in answering the research questions concerning the impact of collaborative learning session for middle managers on initiating future collaborations among employees for effective sustainability implementation at the organization. The responses suggest that our collaborative learning process facilitated future collaborations among employees by reducing the relational barriers and by generating an environment of trust & openness. It has also given them an opportunity to learn from each other for practical outcomes of their efforts. Lastly, the infrastructure which was left in wake to generate future collaborations served the purpose of effective action-research intervention.

C. Addressing the Wider Audience --- Third-Person Research

"In third-person research, people come together to create an organization that provides the necessary conditions for people to engage in first and second-person research." (Trullen & Torbert, 2004)

Reflection on the outcomes of this intervention will help in originating critical thinking among stakeholders to restructure their business models and systems for conserving energy. Introducing a collaborative way of learning will help the managers in generating new ideas that can not only redefine the organization but also change the way people work together. Summing up the experience of this intervention in the form of research paper, emphasizing that how collaborative learning can initiate the future collaborations among middle level managers for achieving sustainability goals, can serve as a base for future first- and second-person research. Different epistemological perspectives of action-research will contribute to the action research theory-practice not only for this company but also for other organizations to reflect upon in future; for addressing their particular impediments. Similarly, publishing this research paper will serve the wider community especially the developing countries in adopting collaborative learning as a modern and effective way of learning for collective knowledge generation. In short, this third-person research contribution will reduce the action research theory-practice gap by serving a wider audience both in national and international contexts.

D. My Own Reflexivity --- First-Person Research

My personal experience of getting involved in the whole process as action-researcher was equally important as the desired outcomes were. This is primarily because personal development and learning of a researcher are significant extracts of the action-research projects which enable a person to generate reflective-experience based learning for future endeavors. Moreover, the interaction of my efforts with those of the company's requires some reflection on my efforts as they, to some degree, influence and shape the outcome. Reflexivity is thus in service to better understanding that impact.

The current study was an opportunity for me to learn about designing the collaborative learning practice through a practical experience. Collaborative learning in a real-time scenario was a living happening for me to build relations as a base to mutuality of a purpose i.e. learning in this case. I believe such learning process can enhance the capacity building both for the organization and the researcher to achieve respective long-term goals of learning with collaborative efforts.

Additionally, my interpersonal and facilitation skills were to be honed. I also began to entertain the idea (quite different from the status quo) that it is not an achievement for a person (usually a man) to become the only leader in a society or community rather the real success is to develop other leaders (including women) by giving them an opportunity to learn and grow. This brewing insight was also aligned with the idea of collaborative learning that builds upon the concept of 'partnership and participation' as described above. Seeing how my personal inquiry concerns connected, became a source of motivation for me to adopt more of a collaborative approach. I began to be curious about how collaborative learning can be an effective source of reducing the relational barriers and enhancing the climate of mutual trust, openness and sharing of rights among the society members whether it is an organization or community as a whole. Thus, my AR project became a site of experiment and self-learning with developing conditions for trust, empowering, sharing and mutual growth.

III. Discussion

Introducing a new way of collaborative learning for middle managers to generate collective knowledge merged the epistemological voices of action-research. My personal life experiences and reflexivity became a source of motivation for this second-person research where participants could share their thoughts and learning resulting in mutual trust and strong relational space among themselves. I believe that no strategic decision such as sustainability can be successfully implemented in an organization without having a strong relational space among employees of an organization. The introduction of collaborative learning in a context where this notion is almost non-existent has paved a way for questioning the current practices and instituting a change for a better future, thus, supporting the third-person research. Moreover, feedback from the participants clearly showed the appreciation for incorporating this new way of learning that can facilitate future collaborations as well, thus, confirming a successful second- and third-person action-research intervention.

My personal development in terms of having open communication, developing interpersonal skills and public dealing came mostly from my professional life. Understanding the disadvantages of not doing so, led me to adopt the idea of

collaborative learning for this action-research intervention. So in this case, second-person research was facilitated by the first-person inquiry leading towards the third-person research by incorporating new behavior of generating collective knowledge as an exemplary practice. However, my reflexivity got enriched after this intervention where I found an opportunity to work with practitioners, thus, helping me in becoming an effective action-researcher to facilitate different social entities in overcoming their challenges. Interweaving three action-research perspectives enhances the significance of this study resulting in mutual benefits for the researcher and the practitioners.

IV. Conclusion

This research project enabled the partner organization to introduce collaborative learning as a new method of learning to initiate future collaborations among middle managers for achieving the sustainability goals. It intended to become a practical learning both for the practitioners and researcher to enhance their respective capacity building for addressing the long-term goals. Current context of this action research project i.e. energy conservation has global importance especially for local industry of a developing country such as Pakistan. The local organizations are striving to adopt new business models for dealing with this global issue. This study has shown that collaborative learning can be a useful practice in this regard with its pedigrees in social grounding and mutual learning system.

Therefore, this research project will pave a way for other organizations as well to take benefits from such practical and experience-based learning methods in order to facilitate future collaborations for achieving sustainability goals by a wider community of organizations. Moreover, the introduction of collaborative learning methods to the middle level managers is itself a significant step towards adopting new learning methods by the local textile industry. The organization under study can show its progressive standing in the industry by using collaborative learning methods for its middle managers in order to promote trust, openness and relationship building for goal attainment. Lastly, future studies based on action-research approach will enable the local industry to address its indigenous issues with actionable outcomes.

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Collaborative Learning Session on Energy Conservation

(07- May- 2016)

Programs' Evaluation Summary

Course Name	Facilitator Name	Institute
Collaborative Learning Session on Energy Conservation	Shumaila Gull	

Facilitator

Excellent	Good	Neutral	Below Avg	Poor
50%	47%	3%	0%	0%

Course's Effectiveness

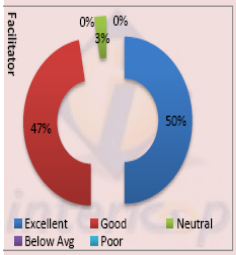
Excellent	Good	Neutral	Below Avg	Poor
50%	47%	3%	0%	0%

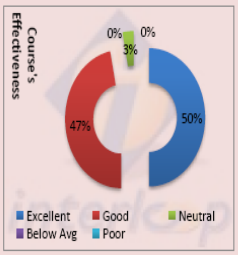
Recommendation for Future

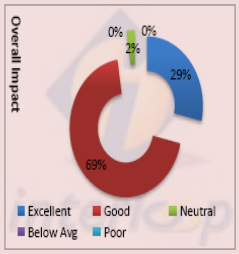
Excellent	Good	Neutral	Below Avg	Poor
57%	36%	7%	0%	0%

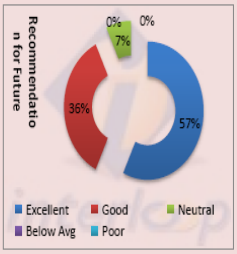
Overall Impact

Excellent	Good	Neutral	Below Avg	Poor
29%	69%	2%	0%	0%









Collaborative Learning Session on Energy Conservation

(07 May,2016)

Programs' Overall Evaluation Summary - Group 1

Overall Effectiveness of Program

Excellent	Good	Neutral	Below Avg	Poor
46%	50%	4%	0%	0%