

SYNERGISTIC RELATION BETWEEN GLOBAL EDUCATION INFRASTRUCTURE And GLOBAL INFORMATION SOCIETY

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ABSTRACT

This paper is about a study, which has been carried out at a chemical production facility in Izmir, Turkey during the spring of 2006 using Participatory Action Research process in a training course exploiting Learning Management System. The system has been tested with 12 chemists working in this factory. The technical training course was carried on in a web-based environment and also routine meetings with the instructors were provided. While for one of the two test groups was expected to deal with problems encountered in the work-place as abstracts problems the other group was expected to bring solutions to the same problems in the factory production line. It was observed that the achievement of both groups was the same, but the work skill of the latter group was better. Hence, it can be concluded that the modes and methods used in education impact competencies of individuals and hence the society.

Keywords: ICT, education technologies, globalization, global information society, global information infrastructure.

INTRODUCTION

Technological innovations are so numerous and radical that they are deeply affecting competition, social organizations, institutions. The rapid and effective advances in information and communications technologies (ICT's), which fostered the inter-dependence and connectedness of the world's citizens through increased flows of goods, services, capital, people and information, made the geographic distance become less important in the establishment and maintenance of cross border economic, political and socio-cultural relations. Globalization is affecting all of the social, political and economic structures and the processes that emerge from the global restructuring. This is marked by the dawn of the knowledge/information based society and economy, the main drivers of which are education and learning. Thus, globalization requires existence and development of an advanced IC infrastructure, based on a network of networks of computers, telecommunications, broadcasting, and content providers - in short a Global Information Infrastructure, which does not exist yet.

ICT's enabled data to be recorded, supplemented, expanded, analyzed, profiled and distributed more rapidly and easily. The knowledge banks provided programs to be administered more easily and efficiently, caused marketing and recruitment to be more informed and effective, and accrued greater value to the professions. Hence, advances in seeking and transmitting information have great importance for the way we learn and teach. The other direction in which the information revolution impacts on education is in what it demands from the system. Thus, the relationship between the globalization world and the instructional/educational technologies, which are the systematic set of procedures developed to supplement the learning theories and provide solutions to learning/teaching problems via employing the advanced means and equipments, is synergistic. However, cultural, economic and political factors impact on diffusion of technological innovation. The synergy between technological and social systems influences how technologies are adapted and utilized by individuals in societies and in organizations. Developing countries lag behind in information infrastructure required to generate and disseminate knowledge. Whereas, for to enable the citizens of the global village to be in a more liberal, democratic, free and secure world, great effort should be given for to develop a sustainable life.

Community-Based Education Program for Sustainability

Participatory training of world citizens in sustainable economy, culture and ecology should be based on principles of participation of all sectors of society, partnership, and appropriate technology, national ownership of the project and encouragement of the creation of a national body of experts. (Coeur de Roy, 1997 p.888) It also entails enhancing participation of the members in the development, implementation and maintenance of programs for generating, increasing and diversifying income creating activities, and fair terms of trade between producers and consumers.

The ultimate goal of this program is sustainable economic and social empowerment of small-scale producers and entrepreneurs demonstrated in the communities' ability to utilize and manage available community resources in a sustainable way and to negotiate for support for sustainable production, product security, marketing, and other income generating activities. The objectives and the ultimate goals of the program implied critical transformative educational processes including learning methods and content.

Transformative education was necessary to create an empowered community capable of responding to its needs, challenges and problems. Thus, as proposed by Chambers, in order to strengthen the program and build capacity of implementers/educators to be proactive and responsive to requirements and challenges of sustainable development, Participatory Action Research (PAR) can be used as an implementation methodology to ensure continuous learning through reflection and action.

The principles of PAR are to be applied to implement the program in a community context, blending it with the philosophy, tools and techniques of Participatory Learning and Action (PLA). (Chambers, R., 1997) This methodology is one of the surest ways of empowering the community and staff to respond to sustainable development challenges in their context without necessarily creating unsustainable influence on the process, outcomes and future.

PAR is an approach to education, research and methodology. It is based on Freirian philosophy of liberation and empowerment through critical awareness building. (Hecq, C.; Meulders, D. and Torres, R.R., 1995) PAR's main purpose is to produce knowledge in an active partnership with those affected by the knowledge and for the express purpose of improving their social, educational and other material conditions. (Bhana, A., 1999:228) It constitutes a deliberate intent by people to continuously learn from their experiences in order to continuously improve their situation in life without relying on external intervention. (Chambers, R., 1997 and Schwandt, T.A., 1997) This methodology values a reversal of roles in which the power dynamics between researchers and communities or individuals keep shifting during the process. Each party plays the role of an expert or a learner at the appropriate time. PAR is distinct from other types of research because it triples as a method of enquiry, a pedagogical approach and a medium for action. (Healy, K., 2001 and Maguire, P., 1987) It is aimed not only at bringing people together for purposes of mutual development, but also at achieving understanding and change. (Wadsworth, Y., 1998) Through PAR, researchers seek to "actively involve people in generating knowledge about their own condition and how it can be changed, to stimulate social, economic change based on the "awakening" of the common people to charge of their development process. (Chambers, R., 1997:108)

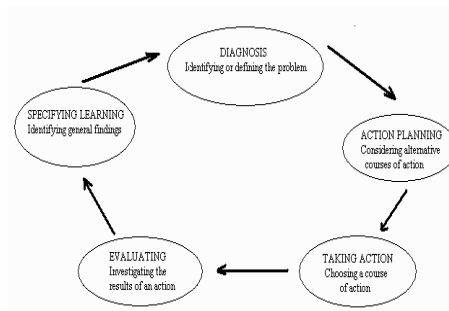


Figure 1: The PAR Process

In PAR, actual research takes second place to the emergent processes of collaboration, mobilization, self-realization, empowerment and the establishment of community solidarity. (Schurink, C.A.M., Bruijn, N.C. de, Pols, M.A., Lucas, P.J.F., and Hoepelman, I.M., 1998) The methodology involves cycles of inquiry (McNiff, J., Lomax, P. and Whitehead, J., 1996) beginning with a situational analysis to identify key issues, followed by identifying and planning strategies to address the issues, implementing the plans, studying the implementation process, identifying new issues, planning and acting again. (Carr, W., Kemmis, S. 1986 and McTaggart, 1997)

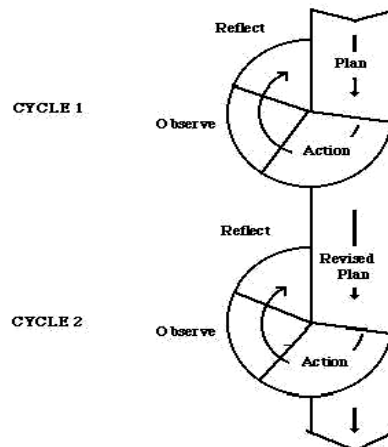


Figure 2: Cyclical Research Process

Thus, PAR is an effective and efficient methodology of enquiry, learning and development in a community context. But, above all since it entails a participatory path, it deconstructs the misconception of research being an exclusive domain of a selected few or the elite.

The Purpose of the Study

The aim of this study has been to boost the efficiency and efficacy of the production via getting every individual in the production line of the company into research and enquiry. For to accomplish this, we have established a training system in quest for the following:

- What are the opinions of the members about the training system for the learning environment on PAR Process?
- Are there any differences between the opinions of the individuals about this system who try to solve abstract problems and real-life problems in the factory?
- How can dissemination of innovation in be improved?
- What should the status and responsibilities of the project managers, employers, industry and/or private sector and the government be?
- What are the opinions of the instructors about the system?
- What are the opinions of the employers about the system?
- Is any rewarding value attained at the end of the training period?
- Is the value placed on training sufficient to encourage faculty?

METHOD

This study has been carried out in the training center of a private establishment during 2006 Spring Season. To support the training and learning needs of this course, a web-site and virtual study center have been developed. Each member was expected to make extensive use of this virtual study center.

Subjects

The education system was tested in two courses. The general credits of the attendants have been calculated and grouped in an ascending list. Then, 6 of the attendants (Group I) were entitled to solve abstract problems. The other 6 (Group II) were entitled to solve the problems they encounter in the production line. The attendants all had BSc in chemistry and were between the ages 24-35.

Materials and Procedure

The material is a highly interactive and collaborative system which includes the following components:

Technology Support for Lectures: PlaceWare Conference Centre™

- Real-time audio synchronized with enhanced Power-Point slides;
- Live web components and links including Java animations;
- Real-time questioning and polling of students;
- Web-based quizzes;
- Real-time courseware

Technology Support for Virtual Research Teams: WebBoard™

- Threaded introductory discussions
- Threaded syndicate discussions
- Attached documents, images, etc.

Technology Support for Lecture Archive : Microsoft NetShow™

- Archived lecture presentations (PowerPoint with synchronized audio)
- Some pre-recorded video
- Web-based courseware and study-guides
- Web-based background reading
- Documentation center of background material and internet links (including Java animations)

The attendants were assigned meetings twice a week with the instructor(s). Sessions were between 45-50 minutes. All attendants had the opportunity of offering their views and opinions when developing the course content. The attendants could communicate with each other and work in teams.

Using the System

Members were able to reach the system from their work place. The system was arranged as follows:

- The interest and expertise areas of the individuals were specified.
- Members were positioned in production lines according to their interests.
- The demands from the customers were specified and the status for the same situation in other business facilities was explained.
- They were enabled to make investigations on their work and they were also able to offer their opinions about the present status of their work line.
- The kind of tools and methods, which would be most appropriate to create the new infrastructure, was determined.
- Members were assigned passwords and usernames to log in the system.
- Course notes, which were prepared in Sharable Content Object Reference Model standards, and quizzes were prepared in a weekly format and could be accessed by the individuals interactively at certain times during the day.
- While the first group was assigned abstract problems regarding the work in the quizzes, the second group was not offered quizzes. But, instead they were asked to bring solutions to the problems asked in the quizzes in real life situations. The questions asked on the quizzes also contained images and audio-video files.

RESULTS

At the end of the course the attendants were offered a survey as an opinion poll for to determine the efficiency and suitability of the system employed in training, which was a mix of synchronous and asynchronous activities and exploited ICT's to create a networked collaborative learning medium.

The test, which was offered to the attendants, the mean scores and the relative standard deviations for the responses were presented in Table 1. This poll is formed in grade credit scale type questions, consisting of 8 aspects, with 5 indicating *The Most* and 1 *The Least*.

The results indicate that both groups had a positive opinion about the system, but Group I, who worked with abstract problems, thought that this study did not allow them to improve their technical side much. Both groups thought that the system improved their skills and competencies.

Table 1: Attendant Opinion Survey

Questions Asked	Group I		Group II	
	M	sd	M	sd
1. I could improve my ICT skills	4.17	0.75	3.67	0.82
2. The PAR process enabled me to improve my analytical and problem-solving skills.	3.33	0.82	4.17	0.57
3. I could improve my organizational skills (i.e. time management)	3.67	0.82	3.50	0.55
4. I could improve my ability to understand/ evaluate the views of others	3.67	1.03	3.50	1.22
5. I could improve my interpersonal skills	3.17	1.60	3.83	0.75
6. I gained new skills for continuing professional development	3.67	0.86	3.50	0.55
7. This system enabled me to have a reasoning point of view.	4.17	0.92	4.17	0.75
8. I could improve my technical abilities	2.67	0.82	4.00	0.89
9. This system should continue to be used.	3.67	0.82	4.17	0.75
Total item score	32.19	8.44	34.51	6.85

Presenter(s)/Instructor(s) Opinion

In the light of the findings, it is obvious that the PAR process should be integrated into the core practices of every organization so that the new demands and challenges of the globalized economy and information society can easily and efficiently be met.

The advantages of the new curricula

- Enables individuals to have creative and entrepreneurial, spirit and be aware of the world socio-political, economic and

business realities.

- Boosts creativity and thus competitiveness via enabling everyone take an active part in research, productivity and (eco) innovation.
- Allows the attendants to obtain a shared vision, get into team effort and have good coordination.
- Enabled attendants to grasp the difference between quality of product and quality of process.

However, the PAR process also had some disadvantages

- Since research takes second place sometimes individuals go too much into details, objectivity, which is necessary for research, is lost.
- Since the process requires a holistic approach the individuals educated in the conventional training system, which is focused on linearity, should be passed through a new training system to grasp their careers with a holistic approach. This requires time and finance.

It was observed that although investing in people and their training is a little bit costly the assets obtained both in terms of credibility and innovative production surpasses the costs.

CONCLUSIONS

Through the PAR process we were able to generate findings that exposed the contradictions and inconsistencies that neither represented the best intentions of the organization as stated in the program goals nor were in line with the implementers' overt aspirations.

The results of the study showed that:

- Collaborative learning tools and technically supported learning systems allowed individuals to gain better hold of ICT's and advance their inter-personal and management skills. However, practical work should also be included in the system.
- Routine short courses should be set to meet graduates continuing professional development (CPD) needs.
- Solutions effective in one setting may have quite different results in others and thus policy borrowing without careful consideration of the local context is problematic.
- Successful implementation of change depends on overall sense of purpose and vision, the ability of leadership to communicate this sense of purpose to others and engage them, a climate of respect for those implementing change, strategies for action and the capacity to seize opportunities.
- The administrations should be prepared to devote more resources to developing a long term relation with education and research.
- The managers should define current and future trends and requirements as concisely as possible.
- The administrations should continually monitor and update the aims and objectives to ensure they meet the requirements of the members. Such a mechanism will also provide a means of maintaining contact with employers and members.

As a result of this study, it can be said that creating the desire for continuous development and learning allows the individuals become more innovative and creative and more positive about welcoming new changes. This also facilitates their adaptation to new circumstances. Interactive work and close collaboration among the individuals and the employers create an environment, where everyone feels loyal and responsible to each other. This in turn would allow the economy and competitiveness boost.

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