Focus: Women of Rural Communities of Tamil Nadu

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An ongoing teaching-research project in mathematics classrooms of community colleges of the Bronx at City University of New York meets with community development projects in rural Tamil Nadu, India, initiated by grassroots organizer and mathematics historian at epiSTEME-1. Over the course of three years, the partnership forms. Mathematicans, physicists, psycho-social workers, action researchers of CUNY work hand-in-hand with the Arunthatiar communities of the Salem and Erode districts of Tamil Nadu. In a unique collaboration, that starts with education and mathematics education in particular, both groups learn from each other, and a project sparks to life. The women of the communities led by Alamelu, a young woman from Salem have created hundreds of self-help-groups of women. This article reports on the teaching-action-research project, which at its present stage integrates the needs of the community for quality mathematics learning with the daily teaching-research activities of the teacher-researchers at CUNY. The self-help-groups develop the idea of Montessori-for-Mothers, and a dream of Communities of the Future is born, whose focus is on preserving the spark of the child.

Introduction

We present here the 3rd Teaching Research Report from the series of like reports presented at epiSTEME conferences, which inform about the results of the unusual collaboration between mathematics teacher-researchers from the Bronx, and grass-root organizers of community based schools in rural Tamil Nadu, India.

We presented the discussion of the Teaching-Research/NYC model and of its tool, the Teaching Experiment (Czarnocha & Prabhu, 2004) at the epiSTEME-1 conference. At the epiSTEME-2 conference we discussed how Teaching-Research methodology originating in the Bronx was utilized in the villages of Nagapattinam and Cuddalore regions to provide a Professional Development of Teacher-Researchers for the young women teachers of community-based schools who, while deeply dedicated to the education of children in their Dalit communities, yet are badly in need to strengthen their mathematical and pedagogical knowledge (Babu et al., 2007), which ultimately in many cases does not go beyond 10th or 12th standard. The results of the teaching experiment investigating impact of teaching signed numbers with two color chips upon the mastery of the operations were discussed. We continued along the path from the community schools of Nagai region to the community schools of Arunthatiar communities in the villages of Sathyamangalam, Salem and Erode regions. It's the story of the transformation of the original vision of Senthil Babu, a historian of science and community organizer in Nagai region, who in our early conversations after epiSTEME-1 said, "We need action research programmes concerning pedagogy – but not merely concerning teaching children better but how the night school as a total insitution in a rural setting can become viable by incorporating the educational needs of the agricultural labourers and the fish and boat workers. The night school needs to be seen in totality not as fragmented centre of concerns for fragmented ideas. We need to create institutions that will sustain themselves, and spur out waves of change from there out to the big bad world…."

His counterpart from Sathyamangalam, Karuppuswami, the head of the READ NGO, informed us last January, that the community is not interested anymore solely in the technical/mathematical knowledge of the teacher; now a strong

need arises for a new profile of the teacher, that of the teacher-community motivator, of the teacher-social entrepreuner. A teacher, who can work along the cognitive development of children in the classroom, and the teacher who can work on the development and transformation of the community surrounding the school. These are new ideas originating directly from India, which offer an exciting opportunity of self-transformation of the community where intellectual and emotional needs of the community's children are one of the basic principles and aims of this transformation. Our episteme-2 paper stated a natural Teaching-Research question posed by these ideas and needs of the communities:

What is the methodological route to smoothly integrate Mathematics Teaching-Research focused on the improvement of mathematics teaching and learning with Action Research aimed at improving the socio-cultural and economical well-being of the community?

The report also offered a first step in answering that question by defining a new T-A-R, that is, the Teaching-Action-Research methodology in the following words:

> Teaching-Research and Action Research are methodologies, which have a common goal, namely the change of practice. One might say that Teaching-Research in the classroom is an Action Research project applied to the classroom environment. While Teaching-Research in a classroom investigates and assesses methods to improve learning, Action Research usually focuses on community-based participatory transformation, or bettering of the life of a community. The integration of both is the creation of the Teaching-Action-Research methodology, which places the teacher in the simultaneous role of a community organizer as well as in the role of the investigator of classroom learning processes in order to improve them. (Babu et al., 2007)

It was discovered during the Mathematics/Psychosocial Teaching Experiment (Bragin et al., 2007) that integration of the two methodologies can be accomplished if both – classroom Teaching-Research and the Action Research psycho-social methods – can be grounded in the developmental approach, which lead to parallel conceptual developments.

Here we present new paths along which school/community integration can be accomplished in order to facilitate the main dream, the answer to the main question:

How to bring up the children we encounter in the communities so that the whole enthusiasm, and brightness and smartness stays with them into the teens, twenties, thirties, fifties, sixties, and beyond? What would have to be the qualities of the teachers to be able to keep that flame of children alive and developing? What do teachers need to know, what attitude and knowledge do they need in order to maximize the intellectual potential of the children? How would village communities need to be organized to make sure that the Spark of the Child grows unfettered to its full brightness? What need to be basic components of the community transformation?

Learning Community of the Future is the village community with its community-based schools which develop along parallel, mutually reinforcing tracks to assure the development of intellectual and emotional potential of its children as well as the development of the village's social capital to their respective maxima.

Focus: Women of the Communities

Montessori for Mothers (MfM)

Every community of the T-A-R project always had a contingent of very active women. In some sites in the tsunami-affected region, mothers stood at the fence of the school for hours watching the education of their children, cheering when one's child answered and urging when the child shied away. In October 2006, the women of the Salem and Erode communities expressed an even stronger interest, viz., the wish to educate their own children. Given that the community-based school is manned by one or two young teachers and the number of children is large, with large age-range, it would be better if the teacher/s could focus their attention on the school-age children and the younger ones could receive the needed educational nurturing from the parents at home. The idea of Montessori-for-Mothers (MfM), as the first bridge between the school and the community was then born.

The T-A-R approach to Montessori for mothers has the dual purpose of reaching women and children simultaneously through addressing the following question:

> How can the mother become a critical thinker while in the process of creating an appropriate learning environment for her young child?

Any Action Research project works along the cycle: design, implementation, analysis of the data, re-design of the approach. The initial design of the MfM approach was envisioned to have three parts for the mother and one part for the child. In its first implementation in January 2007, at 4 sites across the Salem and Erode districts of Tamil Nadu the following 3 parts were included:

1. A discussion of three case studies of women across India who had been successful in using their own personal

strength to combat oppression

2. Documenting their own life-map to begin the process of critical reflection upon their own lives

3. Design of Montessori materials: Tamil letters, words, numbers and color cubes to enable the child and mother to begin "reading the world through the word".

The third part sets up the environment of learning for the child and all three parts are to motivate the mother to create the required environment, while she herself learns.

The actual implementation of the MfM workshops at 4 different sites has yielded an evolved, new structure that could not have been envisioned prior to implementation and is much more robust.

Given the harsh living conditions, the woman may not see many truths in her lifetime, and the spark of her child is the Truth she has definitely seen, and does not doubt it. That is what she wants to preserve. It became apparent in every visit to every night/community-based school that the woman is crying out desperately for help in every possible way. On the last visit it became clear that she is a quick learner – and she knows her mind. "Teach me your methods". "Now I know I can draw". While each such remark can be very difficult for academicians to digest and reconcile, it is the existing reality. Three readings drawn from the real world of success stories where women had overcome their constant neglect and abuse via standing up for themselves, did not have the impact as had been anticipated by the teaching-action-research team. The women of all the communities are ready and in fact hungry for education, for a decent life for themselves and their children. The neglect and abuse is a commonplace occurrence; the women were not affected by the narration of the three case studies. Instead, women watched and listened very carefully to everything, did not have many comments and asked from all of it exactly what they needed.

The letters of the Tamil alphabet was created by Ranganathan, an artist from Sathyamangalam. The felt fabric for several sets was provided, and together in January 2007, the first movable letters were created by him. The women took immense labor over learning. Many said, no they did not know yet, some guessed, and they laughed and it was a game, and slowly as each group kept exchanging the letters since there were many women (104 at 4 separate sites), the fear dropped and they were recognizing the felt letters, feeling them, seeing them, saying them. The group reinforced their courage to try even when wrong and they continued till they were happy just wanting to get another new letter to learn. Palanisamy, a grassroots organizer, a man, was

actively involved in the creation of the environment that resulted. His desire to embrace the new with passion, energy, drive and the absence of the "me" was apparent as he
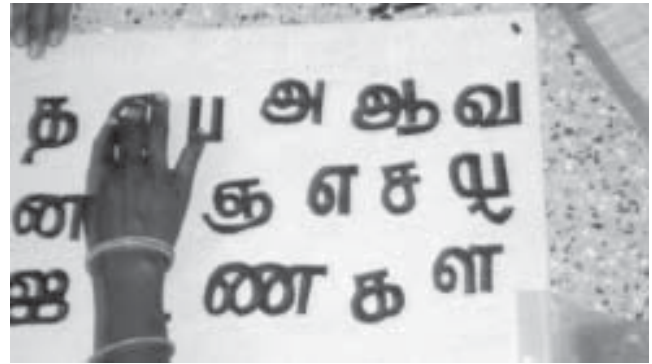

Fig 1. Letters of the Tamil alphabet in felt fabric

moved from group to group, encouraging, joining in the game and prodding where needed. Palanisamy as a model grassroots organizer was perhaps the key for the success of this particular site. The women liked the methods.

At the fourth site, when the women had been given paper and pencils to "just draw", they had sat quiet for a long time looking around. Then one by one they said, we do not know how to draw. Urged by the teaching-action-research team, they slowly began. What emerged was comparable to the descriptions by Paulo Freire (Freire, 1998). One by one they got up to describe their drawing to the group and they said, "now we know we can draw, we like your methods". It came as a big surprise, but in retrospect, it makes perfect sense. They use their hands all the time; however, it is not for writing. They do draw rangoli/kolam, though and that is with powder. It can be seen outside the houses and this had prompted the thought that drawing would be liked by the women. In fact, at one tsunami shelter, a severely traumatized woman who did not speak, after a lot of coaxing from the man and other women in the room, began drawing and very methodically drew the grid before completing the rangoli/kolam. She definitely preferred the iconic representation. However, given one's years of conditioning, the team's teacher-researchers still had not made the connection that drawing on paper with pencil would be difficult. It was the women's remarks one after the other from several in the fourth group that clarified for certain, the landmark that they had crossed that day. The re-design cycle includes roles that the participating women saw and found for themselves.

From the the success of the three-pronged approach to MfM described above, however, a larger project originated from the community-involvement which includes the fol-

lowing:

- Older illiterate women in all sites and especially the fourth semi-urban site directly expressed their desire to have such a program fully functional. They said that they felt humiliated by having to use a thumb impression and being able to sign their own name and read their name and other things would be very useful to them. Further, they said that we have seen our youth with certificates on which the caste brought about a rejection, so their interest was not in certificates.

- Grandmothers who are unable to work stated they would like to set up little sites in their villages and take care of village children.

- Young mothers were seen as the potential beneficiaries of the program. However, the turnout was not restricted to the imagined age group. The intended beneficiaries were very excited about the project. In Ambedkar Nagar, Maheshwari, a young woman with 12 years of education, a mother of two and a full-time agricultural laborer, has been eager to take on the task of running a Montessori school for the children of the community. She has agreed through her own initiative to start a day Montessori Children's Hut and all materials required for her were purchased by the teacher-action-researcher.

The organizers are Tamil speakers and members of the community and are predominantly (all except one) men. When not in Tamil Nadu, the T-A-R team has only e-mail contact with the grass-root organizers as the means of communication with emerging MfM groups.

Self-Help-Groups.

The existing Self-Help-Groups (SHGs) in most communities became the way to disseminate the MfM-derived needs. In particular, Alamelu, a young woman with a bachelors' degree from the Salem district who for the past several years has been actively working setting up self-help-groups, became the engine of the MfM. The SHGs organized by Alamelu are special. The women are actively working toward freeing themselves of any bonded labor and are finding schemes to be self-employed. In one particular village the situation is striking. Some of the women in the communities with the help of Alamelu organized a self-help-group. Soon the other women formed two more self-help-groups. While only the first SHG existed, the other women were supportive but reluctant to form their own. Six months later and repeated visits from Alamelu had all women in their own Self-Help Groups. The stories of the self-employed women of the self-help-groups are fascinating and

inspiring. What are the effects of the women of the self-employed self-help groups upon the community?

1. There are no child laborers.

2. All children attend school.

3. The men have stopped their drinking habits.

It is the women of these self-employed self-help groups that provided the answer to the teaching-action-research question set by the community organizers, viz., how do we get back our self-respect.

The women were vocal in their sense of self. Self-respect means to not be afraid all the time. "At one time if a car had driven into our village late at night, we would have been afraid. Now let 10 cars drive in and we will not be afraid". The sense of strength and self; the simplicity of the open camaraderie toward each other, toward the children and men of their own communities and to the visiting people are evident, as is their clear voices. Tesoriero (2006) confirms the extent of empowerement which in general are reached by women of SHGs. An older woman laments spontaneously, "I sent my own children to be laborers. What did I know, I was illiterate too". The self-employment created by the self-help groups generated the needed stability in their own lives to question and reflect upon their own actions, to be non-judgemental and supportive of new ideas. In the design of the Community of the Future anchored on the community school, SHGs become one of the main supports towards unifying and integrating the life of the emerging community. Both Tesoriero (2006) and Agarwal (2007) point to SHGs involvement and capacities to make positive changes in the village communities, matters leads to wide acceptance and support by men, and the whole community.

Conclusion

The aim of the T-A-R team to assist in finding solutions that were organic was accomplished within the first cycle of the work. Whereas we don't have yet the final answers to the main questions concerning the necessary qualities of teachers working both as MfM educators of the mothers, teachers in the classrooms and the community organizers, we have the initial postulates, which together with the cyclic principle of T-A-R methodology give justifiable promise to arrive at sufficient knowledge of those conditions. The cyclic methodology of T-A-R, inherited here from Action Research, assures that after every cycle (Analysis of the problem→design and implementation→collection of the data and their assessment→analysis and refinement→...) the implemented process can be improved or refined, new

methods can be put into practice so that after several cycles one can arrive at the satisfactory conditions for the community transformation and school learning. One can postulate therefore that the T-A-R teacher working in the community has to

1. have knowledge about the principles of individual and community development;

2. start teaching women through Montessori techniques which are deeply integrated with the daily activities and artifacts women use in their life (not pencil and paper, but the ground and rangoli);

3. guide herself/himself by the learning theories that postulate development at the very concrete level leading to iconic level (Bruner theory);

4. avoid too early connection with other similar cases of women's emancipation.

Next Steps

The organic seeds have to be spread and the grassroots organizers along with the teaching-action-research team have to find the needed next steps. Roy (2004) suggests that the empowerment of communities takes place during the literacy campaign when literacy is linked to the development activities. Teaching-Action-Research approach in Tamil Nadu rural communities has yielded a possible initial structure for the development of the Community of the Future: a Community-based school, women Self-Help-Group and Montessori-for-Mothers program.

Communities of the Future is a living-in-action idea initially born out of the experience of Tamil Nadu's grassroot organizers of rural Dalit communities, and of the Bronx mathematics teacher researchers. Their common central idea underlying the collaboration has been to build upon one principle, the primacy of the well being of children in Dalit communities. On that basis, the new profile of the teacher has been established as the teacher who on the one hand is attentive to and competent in dealing with the intellectual and emotional development of the child in the school, and on the other is responsive to the cultural, socio-economic needs of the community and its development. Such a teacher had been called the Teacher-Community-Motivator by Arunthatiyars. The lens through which the teacher might be looking, to be in agreement with the main principle could be: how should the community be organized so that children in the school reach their true maximum?

As described above a new idea was tried out with success, namely, Montessori for Mothers (MfM) workshop. The methodology of MfM assures that children's intellectual needs are taken care of from the early moments of life by the mother who becomes an organizer of knowledge for her child. It is expected that through practicing the method, the mothers will acquire critical skills and consciousness, which will enable them to make appropriate changes in their families and communities. Community schools might be the places where the Montessori knowledge will be anchored.

Hence the first foundations of the Community of the Future are composed out of:

- Community night school

- Community of the night school,

- Mothers of the communities practicing Montessori Method.

Since the teachers in the school are in the central position, their education has to be very precise and also of adequate breadth. It needs to involve the following themes:

1. Mathematics and mathematics teaching

2. Child and adolescent development

3. Montessori Method development and training

4. Analysis, Synthesis and Development of the communities

5. Teaching-Action-Research practice.

A new component has been added to the design of the Community of the Future:

- *Self Help Groups*: Those amongst them who have reached self-independence, that is, bought themselves out of bondage and created means of support, may have reached the requisite awareness to make them the underlying support for the emerging communities. They could take the life of community schools under their care, possibly as the Mother Council Members. Consequently, SHG can become a complementary element to the teacher of the community school, who is envisioned as an extremely aware and knowledgeable individual. Although literature is still scanty, the few materials that are available point to the unusual volume of social capital residing in women's SHGs, which can be utilized both in community development and in creating good education for the community's children.

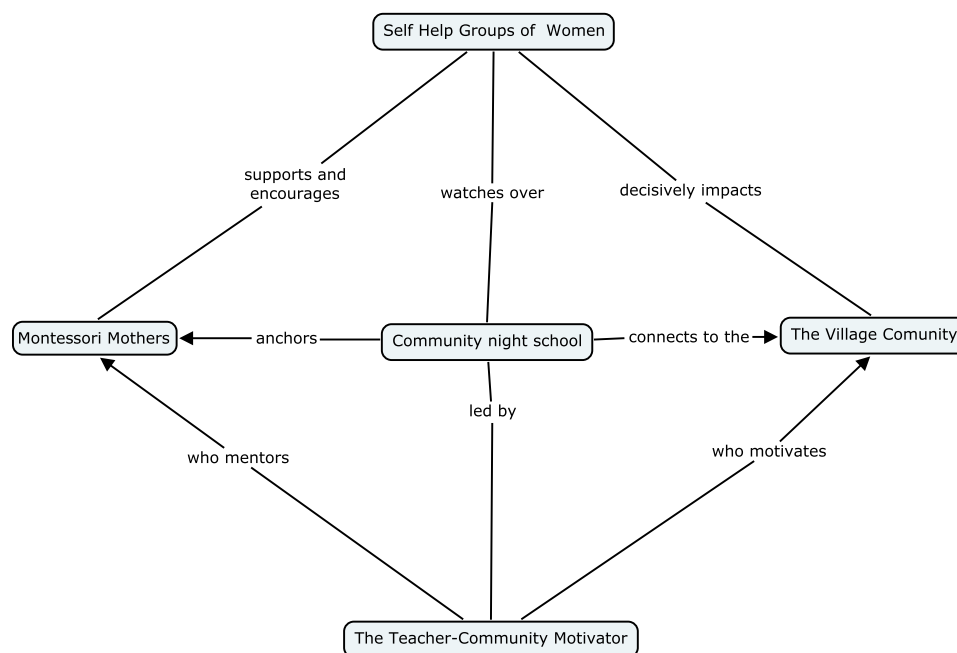- The initial concept map of the Community of the Future is shown in Figure 2.

Fig 2. Concept Map of the Community of the Future

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