BIHAR INNOVATES

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HONEY BEE NETWORK

www.honeybee.org

Regional Collaborator
Dr. Ambedkar Sansthan (AWCCDS), Siwan

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BIHAR INNOVATES

PREFACE

National Innovation Foundation has been pursuing the mission of making India innovative and a creative society since 2000 with the active support of Department of Science and Technology, Government of India. We have not been equally successful in scouting and documenting innovations and traditional knowledge practices in every state.

Thanks to the support of volunteers of Honey Bee network, we have been able to discover many unsung heroes and heroines of our society who have solved local problems without any outside help.

Despite various constraints, NIF has put together a small book celebrating creativity, innovations and traditional knowledge from Bihar. I am conscious of its limitation in terms of coverage and outreach. But if we could uncover so many examples of the ability of local communities and individuals to solve problems on their own without outside help, how much more can be done if state and private sector agencies join hands with NIF actively. I invite the state government and its various organs to actively support our quest to uncover many more creative communities and individuals in rural and urban areas. NIF will then help in building value chain around them.

The book is divided in three parts. The mechanical innovations developed by innovators from Bihar are covered in part one. Selected examples of herbal traditional knowledge are given in part two. The innovations from other parts of the country suitable for the development of Bihar are given in part three.

By no stretch of imagination, could we claim that we have achieved a great deal. We have merely made a simple point.

BIHAR INNOVATES

There are a large number of people who may not have been educated much, may in fact be economically poor also, but still have the ability to solve a few problems so well.

The challenge really is to work out a synergy so that no creative voice remains unheard, and no solution remains localized and unrecognized. By adapting public policy in support of grassroots innovators and traditional knowledge holders, we can make economic development process more inclusive and sustainable.

This book on innovations has been compiled at the request of Dr Vijay Kelkar, Chairman, Finance Commission and Member, Governing Council of the National Innovation Foundation as a tribute to the creativity and innovation at grassroots. This presentation is part of a series of innovation compendium prepared for each State of India. We hope this will be followed up in the form of concrete policy and institutional initiatives in each State to empower creative people to improve the quality of life of common people and thus promote inclusive growth.

It is my belief that such examples will act as spur for other State government departments to look for creative efforts of their staff and users at ground level. I hope that NIF will have the opportunity to work closely with the State government in future and expand knowledge base, add value to selected technologies and help them diffuse through commercial and non commercial social channels for improving the livelihood of the majority of the people.

R. A. Mashelkar, FRS
Chairperson, Governing Council
National Innovation Foundation, Ahmedabad

Towards a Creative, Compassionate & Collaborative India

The Honey Bee network[1] , starting with a handful of volunteers twenty years ago, triggered a movement to scout, spawn and sustain unaided creative and innovative urges in the unorganized sector of our society.

The National Innovation Foundation (NIF) set up in 2000 by the Department of Science and Technology, while building upon the Honey Bee philosophy, has taken this initiative forward.

Under the inspiring leadership of Dr. R. A. Mashelkar, Chairperson NIF and former Director General, CSIR, NIF has taken major initiatives to serve the knowledge-rich, economically poor people of the country. It is committed to making India innovative by documenting, adding value, protecting the intellectual property rights of the contemporary unaided technological innovators, as well as of outstanding traditional knowledge holders. It aims at promoting lateral learning among local communities to generate low cost affordable solutions of the persistent and emerging problems, and enhance the diffusion of innovations on a commercial as well as non-commercial basis.

With major contribution from the Honey Bee Network, NIF has been able to build up a database of more than 75,000 ideas, innovations and traditional knowledge practices from over 500 districts of the country.

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[1] The Honeybee collects pollen from the flowers but they are not impoverished, in the process links one flower to another enabling cross-pollination. Similarly, the Honey Bee Network strengthens people-to-people contacts, learning and networking by pooling the solutions developed by individuals across the world in different sectors. The network acknowledges the innovators, traditional knowledge producers and communicators so that they do not remain anonymous.

Through the collaborations with CSIR, ICMR, BSI and other R&D institutions, NIF helps in getting these technologies validated and value added. Pro bono arrangement with patent firms has helped NIF to file 182 patent applications in India and USA (7 patent applications in US) and 1 PCT. Out of these, thirty three patents have been granted in India and four patents in USA.

Micro Venture Innovation Fund at NIF has provided risk capital for 113 projects, which are at different stages of incubation and the total amount disbursed is close to Rs 1.3 crores.

Receiving nearly four hundred product inquiries from around fifty five countries for various technologies, NIF has succeeded in commercializing products across countries in six continents apart from being successful in materialising thirty cases of technology licensing with the help of partner agencies.

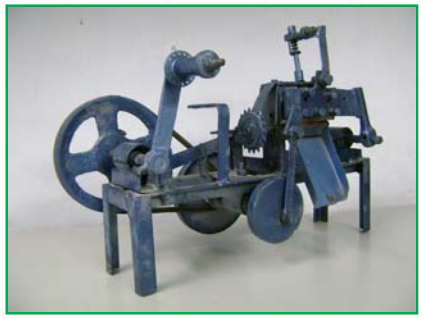
NIF has proved that Indian innovators can match anyone in the world when it comes to solving problems creatively. Where they perform better than rest is in generating more affordable sustainable solutions by using local resources frugally.

Those who see poor only as the consumer of cheap goods, miss the knowledge richness at the grassroots level. The Poor can be the providers also. The Grassroots to Global (G^2G) model that NIF is propagating is all set to change the way the world looks at the creativity and innovations at grassroots.

The Honey Bee Network strongly believes in sharing knowledge among the providers of innovations in their own language, which is achieved by publishing local language versions of Honey Bee newsletter. It also ensures that a fair share of benefits arising from commercial exploitation of local knowledge and innovations reaches the innovators and knowledge providers.

“Innovation opens up new vistas of knowledge and new dimensions to our imagination to make everyday life more meaningful and richer in depth and content”.

- Dr A P J Abdul Kalam



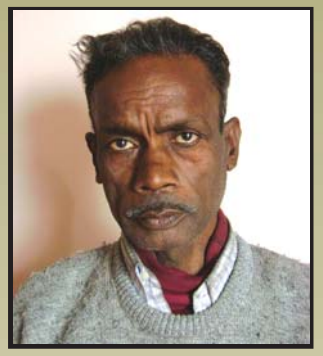
“The purpose of innovation is to create a new value for an individual, team, organization or for society at large”.

- Dr R A Mashelkar

PART I

INNOVATIONS
from BIHAR

This section contains grassroots innovations emerging from rural/urban areas of Bihar



Mohammad Rozadin
East Champaran

Cooker for coffee

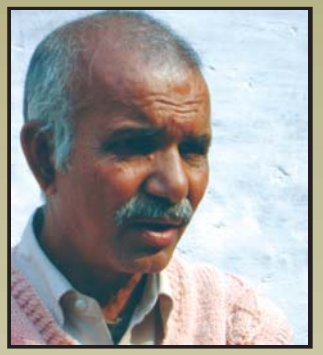
Conventionally, the pressure cookers have been used for making food only. However, the innovator has modified the normal cooker and made it into an espresso coffee making machine.

The modified cooker is used to boil water and generate steam. It is then passed through a modifed delivery system, attached to the lid, to a jar containing milk, coffee and sugar. In five minutes frothy, tasty coffee gets ready!

The modified cooker has been in great demand and even tea stall vendors from nearby districts have bought it for their shops.

02

Reducing the pollution



Virendra Kumar Sinha
East Champaran

For operating a welding machine, the generator used by the innovator emitted a lot of flue gases and also produced unwanted noise. To solve this problem, the innovator retrofitted a cylindrical container to the exhaust pipe of the engine. The specific arrangement of different types of fins in the cylinder filters out the particulates and allows the clean air to pass, resulting in very low emissions and thus controlling pollution and reducing noise.

BIT Mesra, Ranchi has confirmed considerable reduction in the proportion of carbon monoxide and carbon dioxide in the flue gases after adding the device instead of conventional muffler. The temperature of the flue gas was also reported to be significantly reduced. The testing was facilitated by NIF.

03

Ramashankar Sharma
Siwan

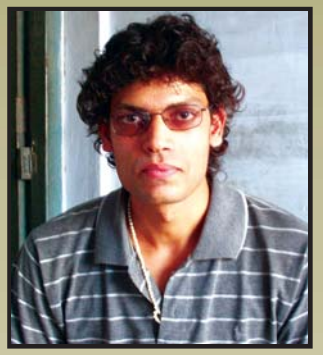
Handpump with a change

The plunger design of a hand pump has been modified by the innovator, which has resulted in substantial increase in the efficiency. The change of material has also helped in reducing the cost and weight as well.

BIT Mesra, Ranchi tested the same at NIF's instance and found that the hand pump with the modified plunger gave 69 percent more discharge than the hand pump with the conventional plunger for the same number of strokes and head.

04

Novel gear mechanism & Cap for the wooden pencil



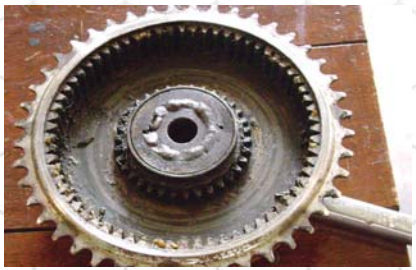
Nishant Ray
Khagariya

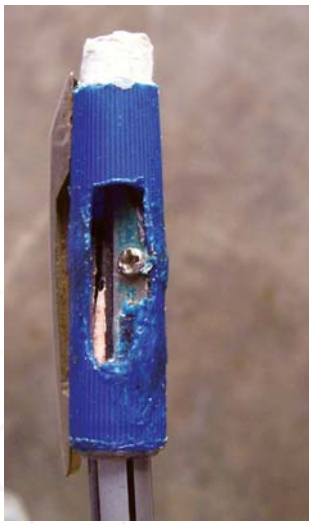
Novel gear mechanism

The innovator has come up with this device to reduce the hard work involved while riding a bicycle/rickshaw uphill. The new gear mechanism enables a person to pedal backwards and yet move the cycle forward, thereby reducing effort and fatigue. It also prevents the reverse motion of the vehicle on slopes.

Cap for wooden pencils

The innovator has interestingly devised a cap for the normal wooden pencil which prevents the tip from being broken easily. The cap also has an eraser and a sharpener to address the other needs of the user.





Mohammad Saidullah
East Champaran

Amphibious Bicycle & Others

Saidullah's penchant for innovations has made him lead such a rich life that it can inspire generations to come. He made the amphibious bicycle in mid 1970s to cross over from one place to another during a flood in the region. Thereafter he has been churning one innovation after the other over the years with his latest being an amphibious rickshaw. Among his many innovations a few that can be mentioned are a mini tractor, key operated table fan, fodder cutter operated centrifugal pump, spring loaded bicycle, mini turbine etc.

The serial innovator, Shri Saidullah was given the Life Time Achievement Award at the hands of the then President of India, in NIF's Third National Competition.

06

Bicycle that can be carried in a bag

Sandeep Kumar
Muzzaffarpur

A gritty and hard working graduate, Sandeep made this folding bicycle, which can be assembled and dismantled easily in a very little time. When dismantled and folded, the bicycle becomes portable such that it can be put in a bag and carried along!

Ghulam Rasul
Katihar

Solar cycle along with FM, radio and charging facility & Multifunctional emergency light

Solar cycle along with FM, radio and charging facility

Move over petrol and electricity operated two-wheelers for here comes the solar cycle, working on solar batteries. Using a 12 V motor, the cycle gives a speed up to 30 km per hour, good enough for a joyful city ride. It also has a tape recorder and FM radio for listening pleasure apart from a plug point, which enables the stored energy to be used for charging/operating various small devices.

Multifunctional emergency light

Who says an emergency light can only be used for lighting purposes? Definitely not the innovator, for he has come up with a solar powered light having tubes that can glow up to twelve hours, along with a FM radio, a mobile charger, a WLL Telephone battery charger and a 12 V DC fan that can be operated for four hours. Apart from solar energy, this emergency light can also be conventionally charged by electric power.

08

Tobacco leaf cutting machine

Udayshankar Sharma
Sheikhpura

It is a manually operated machine for cutting tobacco leaves. The leaves are passed between the cylindrical rasps, flattened and then cut. Depending upon the cutting requirements, adjustments can be made in the assembly also.

Dhirendra Kumar
Muzzaffarpur

New brake mechanism in bicycle

This bicycle is unlike normal bicycles where a lever attached to the cable is pressed to apply the brakes. In this bicycle an accelerator like action is used, where by rotating the hand grip, the brakes are applied.

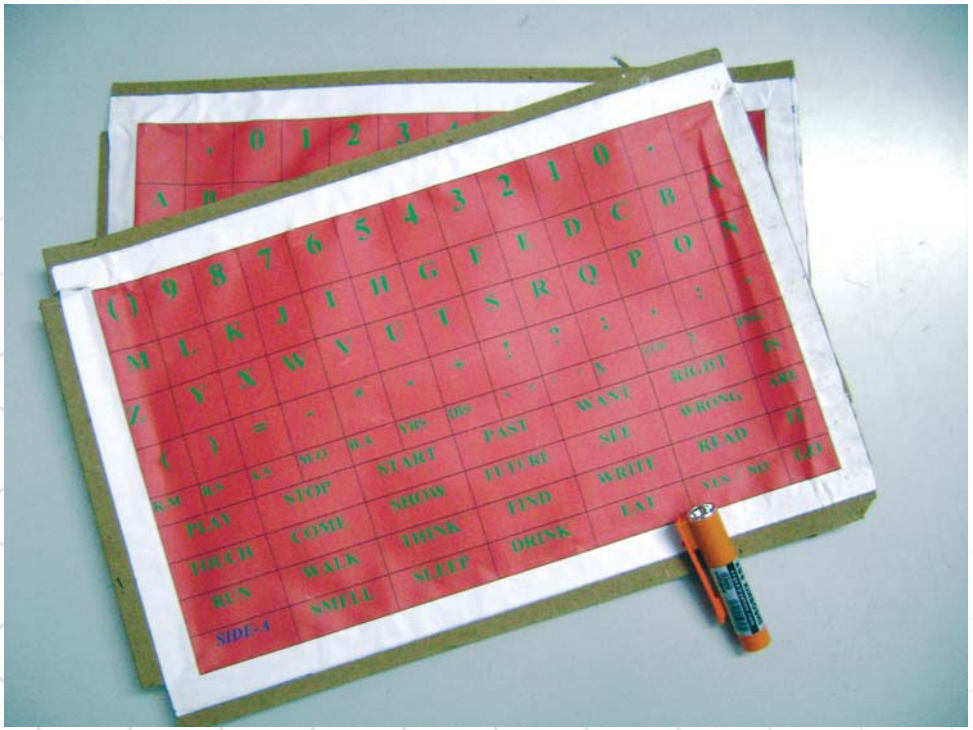
The innovator has also modified a foot operated water pump to make it more efficient.

10

Communication board for the deaf and the dumb

Kundan Kumar
Patna

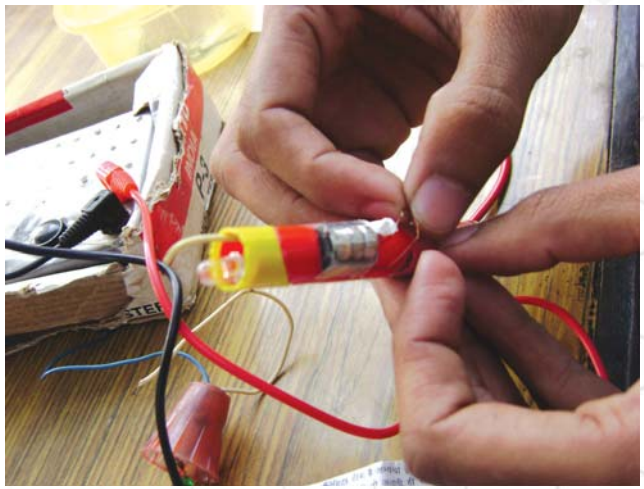
This thoughtful effort from a student enables deaf and dumb people to communicate with others as well as among themselves easily. This is a board that has alphabets, numbers and commonly used words written on it. The user has a torch, which is used to illuminate the specific word, alphabet or number such that the person viewing the board can understand the meaning.

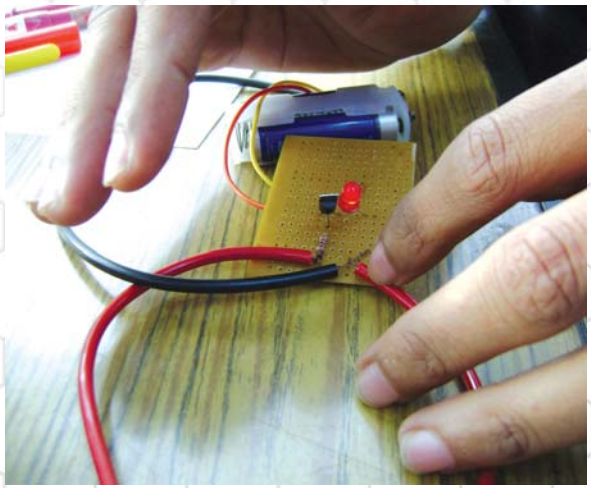


Manish Nirmohiya
Patna

Pen Multimeter

The innovator has modified a ball pen to act as an electric current tester and a sort of multimeter to check diode, resistance and capacitor's ratings. Moreover, it also has a small LED which can be used at night as a source of light.





12

Efficient egg boiler

Pradeep Mandal
Purnia

Understanding that steam at an equal temperature is hotter than water, Pradeep has come up with an egg boiler that uses steam instead of water to boil the eggs. In the lower compartment water boils and the steam rises through a perforated opening to the upper chamber where the eggs are kept. This way the eggs boil quickly saving fuel.

The innovator was awarded in the student's category in NIF's First competition.