

## Plumbing: Vital to Global Health

World Exclusive Community Plumbing Challenge launches in Nashik, November 2015

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### Introduction

Community Plumbing Challenge 2015 was hosted at Maha Nagar Palika School No. 125, in the Mukti Dham neighbourhood of Nashik, Maharashtra, between 2–5 November, 2015. This was the first ever delivery of the project: in India, and in the world.

Nashik was originally selected by the Community Plumbing Challenge organizing team (representing IAPMO, WorldSkills Foundation and Indian Plumbing Association) at the start of this year, due to the proximity of the upcoming Indian Plumbing Conference in September 2015. However, it was quickly decided that in order to achieve genuine impact the project MUST be hosted in a local community setting rather than as a showcase at the conference, and so the existing Nashik IPA School Sanitation programme was identified as a suitable platform to explore. The organizing team visited ten Municipal Schools across Nashik during three days in May 2015, and subsequently School 125 was selected as the most suitable location to host the pilot project.

The school is home to 400 students, between 7–15 years old, and 12 staff. The organizing team observed that the current washroom facilities were inadequate for the number of students that needed to use them, there were no handwashing facilities in the toilet areas, and – as water supply to the building was not frequent – it was hard to flush the urinals. As these sanitation issues are common to many Municipal Schools (not only in Nashik but in many other parts of the country) the pilot Community Plumbing Challenge project was designed with the aim to create practical and educational outcomes that could be used and replicated in many other locations.

### Outcomes

Design briefs were issued to all participating Teams in the first week of September, 2015. This allowed almost two months for each group to research and prototype solutions for the handwashing facilities at School 125, as well as plan for delivery of class lessons and training to the schoolchildren on related themes of sanitation. All Briefs, supporting documents and photographs of the existing facilities were made freely available on the IAPMO website: <http://iapmo.org/CommunityPlumbing/Pages/Resources.aspx>

Arriving in Nashik on Sunday 1st November, the Teams visited School 125 for the very first time that afternoon to inspect the handwashing facilities and other teaching/training areas. Early the next morning – Monday 2nd November (day one)– they were welcomed back by a 400-strong school assembly that featured a flag-raising and lamp-lighting ceremony, traditional dance, and music. Mr. Shanjay Chawan (Nashik Road Prabhag Sabhapati), Sau Sanjita Gaikwad and Mr. Ramesh Dohngade (local Corporators) were the guests of honour on what was a moving and emotionally-charged welcome for visiting international Teams. Following these proceedings, Teams got straight down to work in presenting their individual, in-depth concepts for upgrading sanitation facilities at School 125 to a committee comprising the school Principals, local Corporators, Community Plumbing Challenge organizing team, and other school staff.



Members of Team USA – (l-r) Adam Koenigs, Jill Vande Boom and Miya Preston – arrive at the Express Inn Nashik after meeting with all other international participants in Mumbai on the morning of Sunday 1st November 2015. Credit: Alan Gwee



School 125 turned out in force to welcome the Teams on the first morning of Community Plumbing Challenge 2015. Credit: Anill Patil



Dignitaries, Teams, and School 125 community gather together onstage as Community Plumbing Challenge 2015 begins.  
Credit: Alan Gwee



Sanjay Chawan receives Tilaka on arrival at School 125 for the Welcome Assembly, accompanied by local Corporators Ramesh Dohngade and Sau Sanjita Gaikwad  
Credit: Anill Patil



Dignitaries convene for the lamp-lighting ceremony during Welcome Assembly.  
Credit: Anill Patil



The Community Plumbing Challenge flag is hoisted in the School 125 playground... symbolizing the first time in the world!  
Credit: Anill Patil



Paul Pholeros – Healthabitat Director and lead assessor for the Community Plumbing Challenge – takes time out during Team presentations.  
Credit: Anill Patil



Team India's turn to present their detailed upgrade solution for the handwashing facilities to the School 125 committee on Day One.  
Credit: Anill Patil

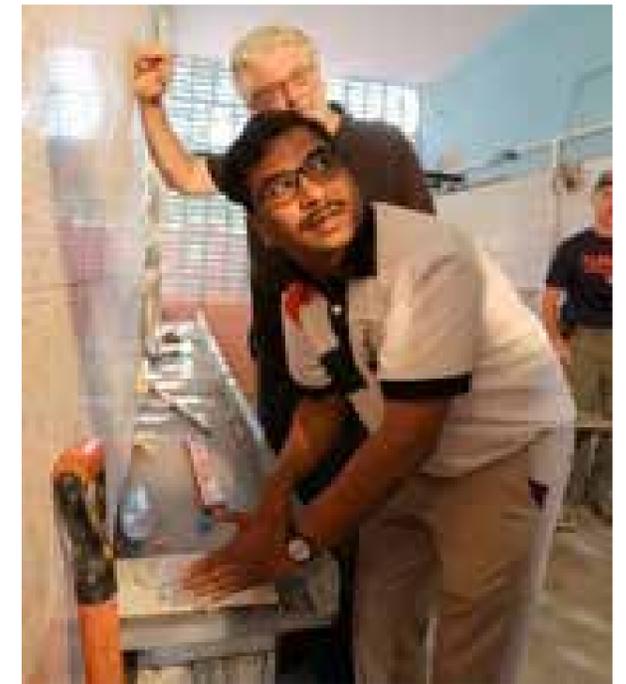
"We took all the designs to the school principals and school committee. They gave very good feedback, asked many questions, and we tried to work with them to come up with not one design – we didn't have one overall winner – but the best parts of ALL designs. So it's fair to say that every team had something in their design that will contribute to the final solution."

– Paul Pholeros

Following feedback from the committee, and several intense sessions of planning and reorganization, Teams collaborated to design and construct a new handwash facility over the remaining two-and-a-half days of the event. Features of the final design solution included:

- A new tank added to the roof, in order to improve water supply.
- Two more hand washing troughs and 25 hand washing taps added, so water is available to more students.
- New troughs sloped, allowing water to run out quicker.
- Push taps used in order to reduce water wastage.
- New pipes added, to supply more water.
- PVC pipes used due to the fact they do not rust, were cheaper to buy, and had little or no value in terms of theft/vandalism.
- Pipe diameter increased to 32mm for the main input, and 25mm for the tap branches to improve water flow. Pipes positioned on the wall, making them easier to replace.
- An extra trough added in each toilet area, making it easier to wash hands after using the toilet. Wastewater would flow from this trough to flushurinal troughs in the adjoining toilet area.
- Additional pipes and taps in order to flush the urinal walls.

The above solution implemented at School 125 considered ease and cost of maintenance, and the use of locally available materials. All four international Teams worked with staff, pupils, and local authorities to improve design, specification and maintenance of these important health-giving facilities.



Chairman of Nashik IPA and Team India Coach Milind Shete leads work in the handwashing area.  
Credit: Benjamin Delaoutre



Swathi Saralaya of IAPMO India puts the finishing touches to new louvres added to help improve light, ventilation and privacy for the boys and girls toilets.  
Credit: Alan Gwee



Project Manager Grant Stewart (left) debriefs Teams at the end of Day 3.  
Credit: Anill Patil



Members of Team India (Lalit Kasawate), Team Australia (Aaron Bridger), and Team USA (Adam Koenigs) work together on the school roof to install a new water tank that will supply the upgraded handwash area.  
Credit: Anill Patil

**Digital Hub**

A critical aspect of the Community Plumbing Challenge was creation of high-quality communications materials to explain the design and development of works onsite, and leave behind a set of practical resources such as siteplans, drawings and 3D models that can be reused by other schools or Community Plumbing Challenge hosts.

The Digital Hub space was established in the Orange Tree Hotel, located directly opposite School 125 in Mukti Dham. It was manned by a group of 3D CAD (Computer Aided Design) developers from the DSK International Campus in Pune, who were responsible for collaborating with the four Teams to create a range of 3D animations visualizing the school building, handwash facilities, and functionality of parts involved in the new installations. Their involvement was organized through the international Autodesk Education 'Student Expert' community, and their presence in Nashik was a direct result of the innovative Autodesk-WorldSkills Global Partnership.

Working alongside the Autodesk team were a student media crew from the School of Science and Technology, Singapore (SST). This team, numbering two teachers and four young students (all of the students being under 18 years old) were responsible for filming and editing a wide range of footage to tell the story of Community Plumbing Challenge 2015. The team travelled to Nashik as part of the SST Global Citizen Programme, which encourages international cultural exchange and "seeks to encourage students to be active drivers of change and contribute to a just and sustainable world". The same students had previously volunteered to film documentary coverage of the pilot Water Innovation Challenge in Singapore in 2014, and seized the opportunity to follow the developing project to India this year.

Two excellent short films were produced during the four days onsite, which can be seen here:

Education video ("From Community Plumbing Challenge, 2015: Nashik, India"): <https://youtu.be/7HeEru2VwqM> Highlights video ("We are Team School 125."): <https://youtu.be/E6--zHRtXR4>

During the four days of the event, through use of the #CommPlumbing hashtag, the Community Plumbing

Challenge Facebook page connected to over 25,000 people across the world, sharing live updates and daily highlights from School 125. PM Narendra Modi commented during an official visit to Facebook HQ in California in October 2015 that social media provided a platform for people to "get the information they needed to know, from their peers" –the Digital Hub played a key role in creating such media in support of Community Plumbing Challenge 2015, and our social media channels will continue to share information and discussion as the programme continues to develop in the months ahead.

**Community Forum**

The Community Plumbing Challenge project culminated on the afternoon of Thursday 5th Nov (day four) by opening the doors of School 125 to special guests from the Nashik Chapter of the IPA. Guests were invited to inspect the new facilities at the school, meet and talk with the Teams onsite, and discuss more about the project management process with the organizing team.



School 125 staff inspect the new facilities alongside visiting IPA Members on Day 4. Credit: Anill Patil

Finally, all visitors gathered in the Digital Hub space to enjoy a short presentation from each Team – followed by a focused question and answer session – on four separate aspects of the CPC project: Design (presented by Team India), Education (presented by Team Basque Country), Plumbing and Sanitation (presented by Team Australia), and Environment and Health (presented by Team USA). Each presentation sparked lively debate and discussion in the room, which welcomed around fifty guests.

This Community Forum was another critical aspect of the overall project structure, offering local IPA stakeholders the opportunity to examine and explore the project, while the international Teams gained further unique experience in pitching their ideas and opinions to local industry stakeholders.



World Plumbing Council Secretary Stuart Henry shares his thoughts during Team presentations at the final day Community Forum. Credit: Anill Patil



Dale Fisher of Team Australia is awarded a medallion of participation by Sudhakaran Nair and Dr Praveen Gedam. Credit: Anill Patil



Team USA demonstrate one of their classroom games for guests during the Community Forum. Credit: Anill Patil



Sudhakaran Nair congratulates Team USA as they are crowned the overall winning Team for Community Plumbing Challenge 2015: (l-r) Adam Koenigs (Plumber), Peter Hollmaier (Plumber and Mason), Miya Preston (Designer), and Jill Vande Boom (Engineer). Credit: Anill Patil

Following the Community Forum, guests reconvened at the Express Inn Hotel – Team 'base camp' for the week of the Community Plumbing Challenge – for a special Awards Ceremony and Farewell Dinner. World Plumbing Council Chairman and Indian Plumbing Association President Sudhakaran Nair welcomed all present, while Nashik City Commissioner Dr Praveen Gedam also addressed guests and presented prizes to each of the project participants, which included World Plumbing Council medallions, commemorative trophies, and other tokens of thanks from School 125 and Healthabitat.



Nashik City Commissioner Dr Praveen Gedam addresses guests at the Awards Ceremony. Credit: Anill Patil

**Next steps**

The experience gained across the partner organizations responsible for delivering the project now gives us the potential to expand a Community Plumbing Challenge programme in schools throughout Nashik, schools in other cities across Maharashtra, and on a larger national level.

The project utilized some of the very best international technical expertise, along with inputs available at the local level: very importantly, from a youth perspective. It now represents an international resource that can be reused, adapted and driven from a local level: at School 125, a range of educational and training resources have been left behind in regard to public health awareness among the children, and in addition to upgraded washrooms, the small, practical actions shared with teachers and students will be continued and maintained. This is a model that can be replicated elsewhere, and the Community Plumbing Challenge organizing team are now on hand to discuss further with any interested parties.



Team USA's Jill Vande Boom leads a game with school children that ends in showing them how much dirt can remain after handling items that are lying on the ground. Credit: Alan Gwee



In the playground, schoolchildren pass a glitter-covered balloon around in a circle, illustrating how easily germs can be spread on our hands! Credit: Alan Gwee

Crucial for the programme going forward, when and wherever it is next presented, is continuing to engage the knowledge and expertise of local people, and using locally-available tools and materials to define best solutions. Final decisions must and will always come from key community stakeholders.

Innovating further still, the cutting-edge digital resources that have been created in collaboration with the local Autodesk Education 'Student Expert' community mean that a range of free learning assets can be offered to schools and communities as the programme develops in the coming months.

In this way Community Plumbing Challenge offers a unique crossover between PM Modi's Swachh Bharat and Digital India initiatives. The digital platform – simply explaining (what would previously have been regarded as) detailed technical information on water supply, better sanitation and facility maintenance to empower community leaders, teachers, and students – has the potential to become a part of India's Smart Cities initiative; once again, the organizing team will be exploring this opportunity in the next phase of the programme.



During the four days of Community Plumbing Challenge 2015, the Autodesk Student Expert Team developed an interactive 3D model of the entire School 125 site.



Exploded view of new taps installed in the handwash areas; an interactive visual aid for maintenance purposes.



Flyover view, transporting the viewer in and through new handwash troughs.



Flyover view, transporting the viewer in and through new urinal flushing system.

**Call to action**

Now the first Community Plumbing Challenge has been completed, we want to ask for your opinions and ideas! How do you believe we can enhance and grow Community Plumbing Challenge from here, across India, together? We urge you to consider ways in which your contacts and resources can combine to replicate this project in ways that YOU need... from local, to regional, to national levels.

**Contact our team**

India:

**Swathi Saralaya** - swathi.saralaya@iapmo.org  
Manager Technical & Training, IAPMO India

**Milind Shete** - nashik@indianplumbing.org  
Chairman, Indian Plumbing Association  
Nashik Chapter

International:

**Seán Kearney** - sean.kearney@iapmo.org  
Manager, International Projects – IAPMO

**Grant Stewart** - grant.stewart@iapmo.org  
Manager, International Projects – IAPMO



"When I grow up, I would like to be a Plumber. I will need a job and I want to help people so I feel good about myself." – Preeti Kodi (11 years old)



"The Teams taught us about Plumbing, how to make strong walls properly, and how to make proper pipelines. They taught us how to treat dirty water and make it safe. They also taught us the importance of cleanliness, and how to keep us and our facilities clean."

- Arbhaj Hussein (14 years old)
- Harstal Sanjay Jadav (12 years old)
- Pavan Yogesh Dondi (14 years old)
- Milind Takaran Ingoli (12 years old)



"By designing these facilities, we have built an example for other communities in India, and in other parts of the world; this design can be replicated, and can benefit and improve health conditions for schoolchildren. We have made many friends, we have learned many things – from plumbing to masonry and construction – it was a complete exposure, and a very good experience."

Darshana Agrawal and Aakanksha Kapse, Team India Pictured, (l-r) Amrapali Kapadne, Aakanksha Kapse, Subhash Deshpande (Team Coach), Darshana Agrawal



"With the use of Autodesk technology, we are really aiming to enhance the visual aspect of the project the students are working on. Our Autodesk Student Experts created 3D models of the entire school itself, so that we can see what it looks like now, and visualise what the final design will look like before it is even built."

Matthew Bell, Autodesk



"We learnt today that if we don't wash our hands, then all sorts of germs will infect our hands. This is what causes the spread of all sorts of bacteria!"

- Sachin Sunil Punekar (10 years old)
- Kavita Ravat (9 years old)



"We played a game on the playground with a ball and glitter. This represented germs, and how easy it is to pass germs on to others. It doesn't just affect you, but others as well... We have been able to work together with other cultures, and it has been a good experience for us!"

Ruben Garcia Valenzuela and Daniela Rojas,  
Team Basque Country

Back row, 3rd and 5th from left, pictured after the Basque Country team complete training exercises with older School 125 students, accompanied by Neeta Sharma (Managing Director, IAPMO India, centre)



"The greatest thing I will take away from the Community Plumbing Challenge experience is the people I have been able to work with, and the fact that we have been able to improve the sanitation and hopefully some of the lives of the kids at this school."

Rob Mauracher, Team Australia



"Last year [during the pilot Water Innovation Challenge project in Singapore] being a participant, presenting, and doing the practical tasks seemed so much more theoretical. But today, working here, we are looking at the kids' faces, smiles, and we are leaving them with something. So this is real; we are actually changing the lives of people! This is a competition, yes, and I am a coach on Team USA... but ultimately I am part of Team School 125."

Judith Torres, Team USA (pictured back row, centre)