



CoderDojo

ECHO

(Ethos, Culture,

Happiness and

Outcomes)



About this Guide



CoderDojo's vision is a world where every child has the opportunity to learn how to code and to be creative in a fun, safe and social environment.

To enable establishing a cool learning environment CoderDojo ECHO (Ethos, Culture, Happiness and Outcomes) has been developed. It has been designed to be simple, understandable, practical and translatable as possible. It is a useful guide for all existing and new Champions and volunteers to implement best practices and to establish a positive learning environment at all Dojos.

This is a "live" guide, feedback and further lessons learned are welcome and will be incorporated into the guide as available. Collaboration across the movement helps to ensure that all benefit from each others experiences.

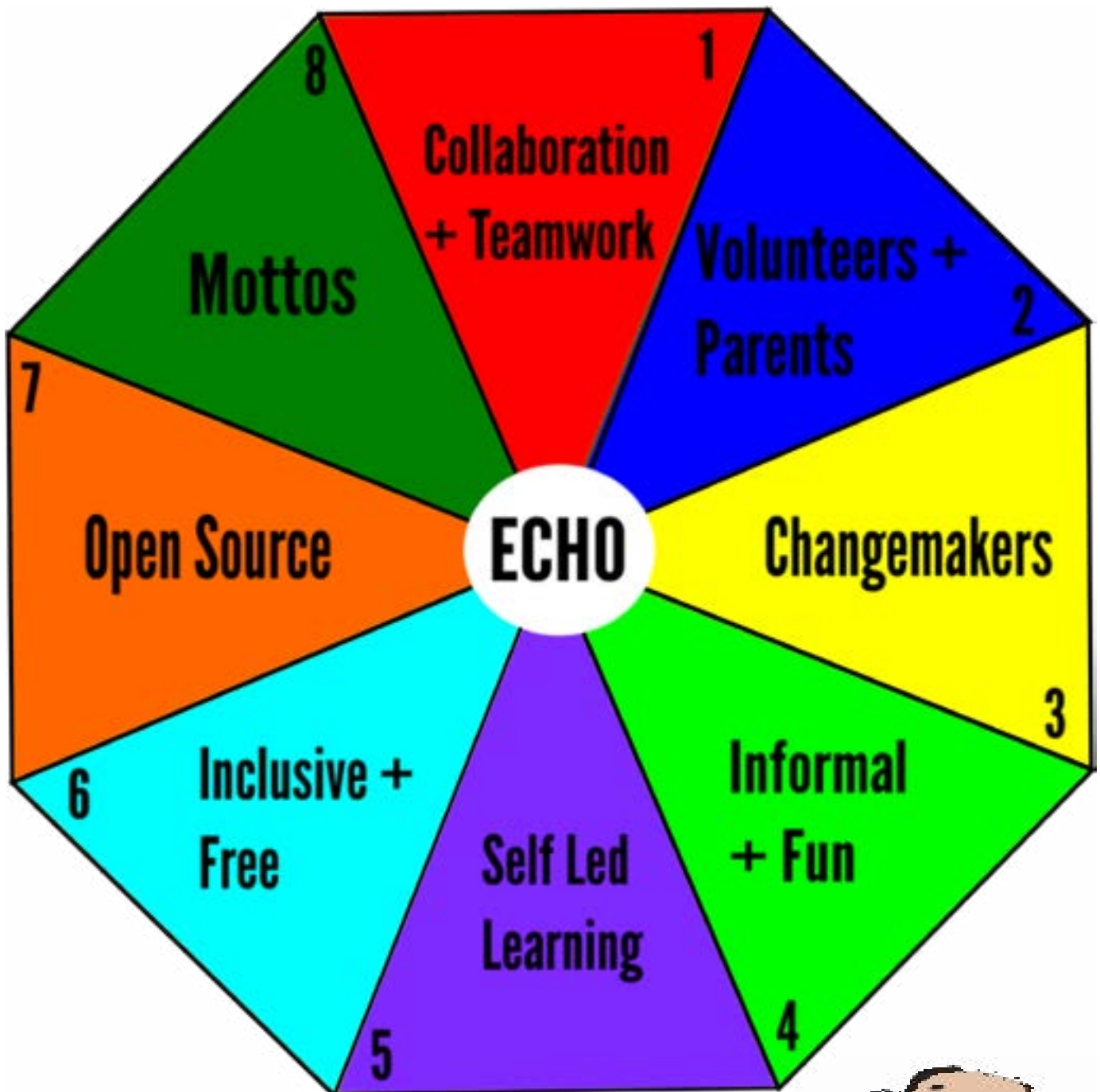
It includes learning techniques used and learning culture lessons learned from experienced Champions and expert contributors around the world. Also incorporated is input from some of the leading experts on child led learning, e.g. Ken Robinson, Sugata Mitra, Seymour Papert and Mitch Resnick etc.

In this one guide, all of the community has a "go to" place, to which to refer for support in understanding the learning environment which enables the fun safe learning culture that all CoderDojo kids around the world will experience.

Dojos can have different modes of operating, this guide outlines the overarching learning best practices that the majority of Dojos, if not all, follow, whether they even realise it or not. Some do it intuitively, some actually stop to think about, having it here in a document like this will be useful for anyone running or starting a Dojo.



CoderDojo Culture Wheel



1. Collaboration and Teamwork

Collaboration
+ Teamwork

Teamwork

We recommend encouraging young people to self organise into teams; to help them to understand their strengths and to learn how to work best within groups.

Different people have different strengths, learning from each other is a benefit of working in groups and teams. At CoderDojo young people of different abilities are encouraged to work together on projects and to learn from and mentor each other.

Easy ways of encouraging this are; ensuring there are two/three young people working on the same computer occasionally, taking turns at the keyboard and encouraging to share and help each other.

Working in Mixed Groups

Teams do not have to be of the same age group or ability; mix it up and give everyone a chance to learn and grow with group collaboration! All youths will have the opportunity to develop leadership skills and to take responsibility for less experienced or younger kids who will thereby learn from relevant role models.

Gender

If possible try to ensure that groups are mixed and not just restricted to a certain gender so that young people are working across gender.

CoderDojo volunteers around the world make a special effort to ensure that girls and young women are given the opportunity to engage with technology. Encouraging Dojo attendees to work in mixed groups is a great way to encourage diversity and inclusion.

Diversity within teams is a known catalyst for innovative thinking and for creativity and encouraging girls to become mentors as soon as possible is a strong catalyst for more girls to engage.

Collaboration

Dojos should consider the opportunity to establish teams across Dojos and across geographic borders. Not only does this introduce borderless sharing and virtual learning, it also increases the diversity within teams and emphasizes the global nature of community.



2. Volunteers and Parents



**Volunteers +
Parents**

Volunteer Mentors

Dojos all around the world are facilitated by Volunteer Mentors who donate their time and share their technology knowledge and skills. Dojos benefit from the generosity and benevolence of individuals who foster and encourage young digital creators and explorers.

These Mentors encourage young people to explore technology for themselves and are there to assist when young people need it, but do not teach or lecture.

Youth Mentors

One of the best ways to learn is to pass on what you have learned to others by becoming a mentor. At Dojos young people are encouraged to share their knowledge with others.

Ninjas should be encouraged to help less experienced kids, beginners and younger children. Younger, less experienced kids are also encouraged to work in groups.

This not only gives responsibility and development opportunities to the older children but also gives the young attendees peer role models to look up!

Parents pitch in!

As one of CoderDojo's founders Bill Liao often says, "CoderDojo is free, but it's not a free ride!"

While it varies from club to club, parents and guardians are usually asked to stay for the duration of the Dojo and while they're there they are encouraged to help out in anyway they can.

When they don't have any programming or technical skills parents are encouraged to help out doing other tasks like taking on the registration of kids, check in, social media or even local outreach activities.

Parents are encouraged to not work with their own children directly if helping out. They are also reminded to keep their fingers off the keyboards! This is to enable the young people to have full creative freedom and to direct their own learning journeys.

Top Tip: Not all young people will love computer programming. It is ok to learn that they don't like it too! Some though will REALLY get it and become SUPERSTARS!

3. Changemakers



Technology and Coding as Tools for Positive Change

Young people are encouraged to work on themes and projects of direct interest to them. Socially, environmentally or community beneficial goals can be introduced to help young people identify opportunities to positively influence the world around them.

Kids and young people are frequently motivated by projects focused on; protecting the environment, sharing knowledge, solving a social problem, supporting a community and themes around physical and mental wellbeing.

Enabling and Empowering Kids

In Dojos all across the world young people are being empowered with life skills to help them to succeed. As well as teamwork and collaboration skills, young people are encouraged to present their projects and develop their communication and leadership skills.

At their local Dojos young people develop confidence and learn how to trust in their own voices by directing their own learning and by taking responsibility through engaging in youth mentoring.

Young People are Given Responsibility in their Dojo

Young people are involved in the running of their Dojos and are included in major Dojo decisions.

Young people also determine the subjects and concepts that they would like to explore and learn.

Top Tip: Teamwork and collaboration helps young people to develop confidence and to improve communication skills!

4. Informal and Fun

Informal
+ Fun

CoderDojo is a club environment, which is fun and engaging!

The atmosphere in a Dojo is fun and social. Dojos are clubs with their own communities. Seats are set up in groups, with young people chatting and working together (avoid lecturers/teachers at the top of the room and young people sitting in lines listening.)

CoderDojo clubs operate regularly which enables frequent opportunities for development and socialisation, both of which are of great benefit to young people.

Mentors and parents are all involved in their Dojos. All roles at Dojos are relevant and interaction between all roles is important. Everyone supports each other; the admin volunteers and the technical mentors are all in it together. Everyone has a voice and everyone is respected.

Kids and young people are at the center of all Dojos, their engagement and happiness are monitored to ensure that all are included and involved. Kindness is at the core of what CoderDojo is about!

Not all young people will choose to attend every Dojo session. Some come once, some every week, some come regularly; young people are welcome to attend when they want to.

Feedback should be constructive and positive

No idea is a bad idea and there is no such thing as failure! Ideas are sought and encouraged and taken into account. Young people learn as they explore! People learn from making mistakes and taking risks, allow kids and young people to do this.

Sometimes it is appropriate to provide young people with group feedback, sometimes it is best to do so on a one to one basis.

Young people can get frustrated and disappointed, that's ok, help them through this with advice, support and encouragement.

Top Tip: A Dojo has a club atmosphere so socialising, chatting and making friends is encouraged!



5. Self Led Learning



At Dojos young people are encouraged to explore coding, computer programming and technology through applying these to their interests. They are encouraged to develop lifelong competencies and passion for learning. They think about their own hobbies, pastimes, and interests and then use technology to reflect these. Allow the young people to direct their learning through choosing what they want to learn. Want to develop websites, apps, games, Minecraft modifications? Sure thing!

Encourage young people to have a choice about what they are learning and encourage them to try to find the answers to their own questions from their peers, the internet and then from mentors. "Ask three then me" is the motto that reminds adults that kids look for three other sources of help and information before approaching their mentors.

Some young people may need help discovering their interests. Explore and encourage them to think about topics in which they are interested. Don't give them an interest, but probe them to see what might spark their own interests.

By the way, some kids may excel at coding while others may struggle and some may not like coding at all. Don't be disappointed if some kids opt out. They had the opportunity to identify that coding is not for them!

Non Curriculum Based

Young people are not forced to follow a set learning path. They are introduced to explore concepts in programming and are then encouraged to experiment further through their own individual projects. Young people set their own goals, with help from mentors; they are not forced to follow a prescribed path.

Their learning journey reflects the young person's own pace of learning and their own abilities. Some move from apps to websites to games, others like to explore different programming languages. Some young people will be happy to stay working in Scratch for a year, others won't. Individual paths and journeys evolve and this is a good thing.

Some Dojos use rewards systems such as open badges or colored USB belts as a motivator and as awards for diligence, persistence and for attaining different skill levels.

Learning through project work

Learning through project work is a different approach to following a curriculum. Young people are guided to learn the basics but to then learn further based on what they want to achieve within their projects rather than through following a prescribed learning path. They learn by exploring and creating actual projects, software or hardware.

For example, while many young people may be working on HTML, every website will look and feel different and they will be themed according to the young person's interests and contain different functionality and subject matter based on the young person's goals for their project.

6. Inclusive and Free

**Inclusive +
Free**

CoderDojo Participation is always free!

There is no charge for attending any CoderDojo Dojo worldwide. This enables Dojos to be open and inclusive for all members of society who wish to participate.

As Dojos are free to attend for all participants. Mentors and parents are all providing their time and resources on a free of charge basis. This is fundamental to the atmosphere at Dojos.

No one will be turned away or excluded because they can't afford access to technology or to a club where they can belong and learn.

CoderDojo is open to all!

CoderDojo is fully inclusive and encourages diversity. All young people regardless of gender, social status, religion, race, sexual orientation or beliefs are welcome to attend their local CoderDojo.

For more information on inclusion at CoderDojo please see our inclusion policy [here>>](#).

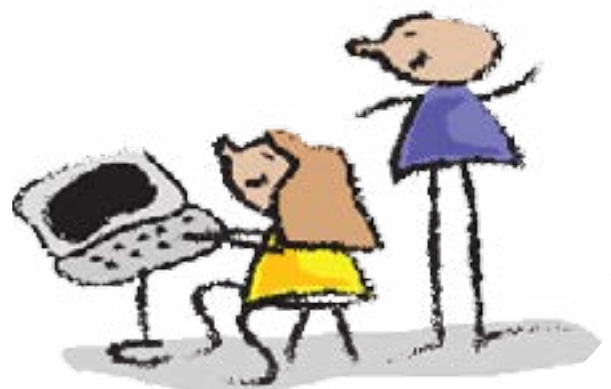
Actively encourage girls to get involved in coding!

It is estimated that out of the people currently pursuing careers in computer programming the number of women participants is lower than 20% globally.

It is a goal of Coderdojo to encourage more young women to engage with programming and have visible role models available to them in order for them to be able foresee opportunities in this area.

For more information on how to encourage more girls to code please see our [CoderDojo Girls Guidelines document](#) or [email us](#) to join the CoderDojo Girls Group.

Top Tip: To engage girls try encouraging them to focus on visual aspects and on using narratives in their projects! Hardware projects are also very popular with young women!



7. Open Source

Open Source

CoderDojo is Open Source

Since its establishment CoderDojo has been based on an open source model; anyone anywhere can set up a Dojo, if they operate within the CoderDojo ethos and values.

Just like in the open source software development community CoderDojo's Champions and Mentors are part of the global CoderDojo movement and network. All are encouraged to share their insights and improvements.

Kata, the CoderDojo Community Content and Knowledge base, is the place to go to to share resources and lessons learned. You can access Kata [here>>](#).

Use of Open Source Software

CoderDojo encourages young people to use open source software which is free of charge and accessible by all.

All software made available to young people at Dojos is available free of charge, which enables Dojos to be fully accessible.

Using open source tools provides young people the knowledge and experience of providing input into global software development projects. They can shape and improve technology in the world in practical and meaningful ways.



8. Mottos

Mottos

One rule, be cool!

Helping, sharing, supporting, encouraging, cooperating and being kind are all very COOL!

Bullying, lying, time wasting and general disruptive behavior are all considered uncool!

This motto has been around since the very first CoderDojo session and is used by Dojos and volunteers all around the world.

Ask 3 then me!

This motto is used in Dojos around the world to encourage young people to be self motivated in their learning and not to be overly reliant on mentor support.

Young people are asked to problem solve themselves and with their peers before consulting an adult.

Ask yourself first, ask the internet/use search engine, ask your peers and only then ask a mentor!

If you made it you can play it!

Young people are empowered to be creators and their Dojo time is focused on this. To encourage active creative participation with technology, young people do not simply play games at their Dojo.

Young people who are hooked on gaming are encouraged to create their own games or to make modifications for games that they already play (like Minecraft!) so that they're using their time at Dojos constructively creating, not passively consuming!

Top Tip: Some young people will be more advanced and autonomous than others and will use the Dojo as a space to work on their existing projects and get advice.

CoderDojo Manchester



CoderDojo Belgium



CoderDojo Milano



CoderDojo Warrington



Outcomes

Diversity

Thinking

Happiness

Coders

Skills

Fun

Fearlessness

Self-Led

Openness

Creativity

Innovation

Empathy

Confidence

Inclusion

COOL

Engagement

Resourcefulness

Kindness

Volunteerism

Collaboration

Change

Belonging

Empowerment

Challenging

Results

CoderDojo Learning Culture Influencers

There have been many great innovators and drivers of educational change that have influenced the development of the CoderDojo learning ethos. See below for more information on some of the themes covered in this guide.

Sir Ken Robinson

Sir Ken Robinson, PhD, is an internationally recognized leader in the development of creativity, innovation and human resources in education and in business. He is also one of the world's leading speakers on these topics, making a profound impact on audiences everywhere. In 2011 he was listed as "one of the world's elite thinkers on creativity and innovation" by Fast Company magazine, and was ranked among the Thinkers50 list of the world's top business thought leaders.

The videos of his famous 2006 and 2010 talks at the prestigious TED Conferences have been viewed more than 25 million times and seen by an estimated 250 million people in over 150 countries.

[Video: Sir Ken Robinson: Changing Education Paradigms](#)

Sugata Mitra

Educational researcher Dr. Sugata Mitra's "Hole in the Wall" experiments have shown that, in the absence of supervision or formal teaching, children can teach themselves and each other, if they're motivated by curiosity and peer interest. In 1999, Mitra and his colleagues dug a hole in a wall bordering an urban slum in New Delhi, installed an Internet-connected PC, and left it there (with a hidden camera filming the area). What they saw was kids from the slum playing around with the computer and in the process, learning how to use it and how to go online, and then teaching each other.

The "Hole in the Wall" project demonstrates that, even in the absence of any direct input from a teacher, an environment that stimulates curiosity can stimulate learning through self-instruction and through peer-shared knowledge. Mitra, who's now a professor of educational technology at Newcastle University (UK), calls it "minimally invasive education."

[Video: Sugata Mitra: Child Driven Education](#)

CoderDojo Learning Culture Influencers

Mitch Resnick

Mitchel Resnick, LEGO Papert Professor of Learning Research and head of the Lifelong Kindergarten group at the MIT Media Lab, explores how new technologies can engage people in creative learning experiences. Resnick's research group developed the "programmable brick" technology that inspired the LEGO Mindstorms robotics kit. He co-founded the Computer Clubhouse project, a worldwide network of after-school centers where youth from low-income communities learn to express themselves creatively with new technologies. Resnick's group also developed Scratch, an online community where children program and share interactive stories, games, and animations.

He earned a BA in physics at Princeton University (1978), and MS and PhD degrees in computer science at MIT (1988, 1992). He worked as a science-technology journalist from 1978 to 1983, and he has consulted throughout the world on creative uses of computers in education. He is author of *Turtles*, *Termites*, and *Traffic Jams* (1994), co-editor of *Constructionism in Practice* (1996), and co-author of *Adventures in Modeling* (2001). In 2011, Resnick was awarded the McGraw Prize in Education.

[Video: Mitch Resnick: Let's Teach Kids to Code!](#)

Salman Khan

Salman Amin Khan is a Bengali American teacher, entrepreneur, and former hedge fund analyst. He is the founder of the Khan Academy, a free online education platform and a 501(c) organization. From a small office in his home, Khan has produced over 4,800 video lessons teaching a wide spectrum of academic subjects, mainly focusing on mathematics and sciences.

As of April 1, 2015, the Khan Academy channel on YouTube has attracted 2,139,848 subscribers and the Khan Academy videos have been viewed more than 527 million times. In 2012, Time named Salman Khan in its annual list of the 100 most influential people in the world. Forbes magazine featured Khan on its cover with the story "\$1 Trillion Opportunity."

[Video: Salman Khan: Flip the classroom!](#)

CoderDojo Learning Culture Influencers

Professor Seymour Papert

People laughed at Seymour Papert in the sixties when he talked about children using computers as instruments for learning and for enhancing creativity. The idea of an inexpensive personal computer was then science fiction. But Papert was conducting serious research in his capacity as a professor at MIT.

This research led to many firsts. It was in his laboratory that children first had the chance to use a computer to write and to make graphics.

The Logo programming language was created there, as were the first children's toys with built-in computation. The Logo Foundation was created to inform people about Logo and to support them in their use of Logo-based software for learning and teaching.

Today Papert is considered the world's foremost expert on how technology can provide new ways to learn. He has carried out educational projects on every continent, some of them in remote villages in developing countries. He is a participant in developing the most influential cutting-edge opportunities for children to participate in the digital world. He serves on the advisory boards of the LEGO Mindstorms product line (which was named after Papert's seminal book *Mindstorms: Children, Computers and Powerful Ideas*).

Papert's contributions go beyond the field of education. He is a mathematician and is a cofounder with Marvin Minsky of the Artificial Intelligence Lab at MIT and a founding faculty member of the MIT Media Lab, where he continues to work.

[You can find out more about Papert and his work here>>](#)

Acknowledgements

Thank you to all of the CoderDojo Community members who provided input for this guide and to all the CoderDojo volunteers worldwide who work tirelessly to introduce young people to the magic of technology.

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Barbara Laura Alaimo
Bill Liao
Carmelo Presicce
Cyril Treacy
Giulio Bonanome
James Whelton
Kamil Sieko
Mary Moloney
Noel King
Pier G. Grossi
Walter Vannini

Contact Us:

If you have any questions, feedback or further input on this document

please feel free to contact info@coderdojo.com



CoderDojo
Foundation