# COMPUTER CLUBHOUSE NETWORK

- *collaborative, laboratory and community learning environment for disadvantaged young people based on ICT and media didactics*

*Media based learning inspiration from sosuMedia*

The global youth project Computer Clubhouse Network, launched by the MIT Media Lab in Boston in the 90th, aims to offer innovative and efficient non-formal after-school environments for disadvantaged young people between 12 and 18 of age.

The clubhouse activities are based on the young people's own interests and talents and invite them to unfold their skills, or develop new ones, with unlimited use of advanced media tools – and establish real-life collaboration with companies and institutions in the community.

The clubhouse offer aims to empower the young people and give them both self-confidence and skills to allow them to attend more formal education or approach the labor market in a new way.

No teaching takes place in the clubhouses. All activities are organized as teamwork in which a group of young clubhouse members collaborate with professionals from companies, artists or volunteers from the community's cultural and educational sectors – facilitated by a clubhouse mentor.

The Computer Clubhouse is governed by a small number of basic principles, presented in this paper.

The Computer Clubhouse set-up offers great inspiration to all sorts of formal education. It offers an innovative didactic platform for collaborative, laboratory and community based learning processes, based on the young people's interests and talents.

The clubhouse didactics offer a dramatic alternative to the traditional classroom teaching and its shortcomings in relation to the new generations of young people, especially to groups of young people in need of special learning offers.

Even though the clubhouse learning principles are based on the theories of constructionism, the clubhouse environment is very un-academic: what is important for the young people's learning can be said on a few pages…

This paper presents a mosaic of small descriptions of the Computer Clubhouse concept, written by the creators of the global project themselves.
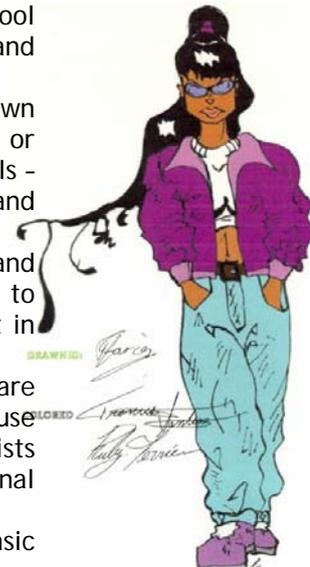
*The Computer Clubhouse Village*
**A virtual meeting place for an emerging community of learners**
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# The Computer Clubhouse – *at a glance…*

The Computer Clubhouse Network is an international affiliation of organizations that all have a common purpose: providing opportunities for youth from underserved communities to explore their own ideas and become more capable, creative and confident learners through the use of state-of-the-art technology.

Clubhouse community members actively engage in learning-by designing in an environment created to promote informal coalescing of groups around common interests. Having grown, with the support of Intel corporation, from a few to close to a hundred Clubhouses, spontaneously formed design teams no longer need to share the same physical space. The Computer

Clubhouse Village provides a virtual extension of the Clubhouse and takes to a new level the emerging community of learners.

Becoming a virtual community with members from around the world brings new opportunities, as well as new challenges.

There are currently Clubhouses in 15 different countries where more than a dozen languages are spoken. Even though the Network language is English, the Village strives to be a multilingual community where members are welcome to participate in a language they feel comfortable using. As we move to a third phase of development of the intranet, we will facilitate this interchange by providing an interface in languages other than English, whenever it is permitted. Translation is not only time consuming but also complex, considering regional variations in popular languages like Spanish and the lack of terminology in other languages for new technology and ideas.

Bilingual members have become crucial to enable communication among those who speak only one language as they spontaneously translate for others, but there is a need for a concerted effort with professional translators as we move forward.

Adapting to the local culture and needs while preserving the Clubhouse guiding principles is both a challenge and an opportunity. The Clubhouse learning approach has been developing since 1993, in conjunction with the MIT Media Lab, and continues to evolve as the Network grows and incorporates new technologies and new ways of thinking about them. It is based on ongoing research from several fields that revolve around the use of new technologies to enhance learning, taking into account the role of affect and motivation in the learning process, the importance of the social context, and the interplay between individual and community development.

The four guiding principles of the Clubhouse learning approach are

- learning-by-designing,
- following your interests,
- building a community, and
- fostering an environment of respect and trust

Both the Network and the Village, reflect the same guiding principles that gave rise to the first Computer Clubhouse. In both cases, applying the principles to the specific needs of each community has been a process only possible with the participation of the local communities, facilitated by Community Based Organizations carefully selected to support each individual Clubhouse. The Network has been greatly enriched with the addition of people from diverse states and countries as they all bring their own perspective to the table.

Youth are developing meaningful projects in their communities while at the same time sharing their projects and ideas with people outside of their communities who may provide feedback or even collaborate through virtual environments.

**Keywords**:

- Virtual learning environment
- Creativity
- Collaborative learning
- Empowering
- Networks
- Learning environments
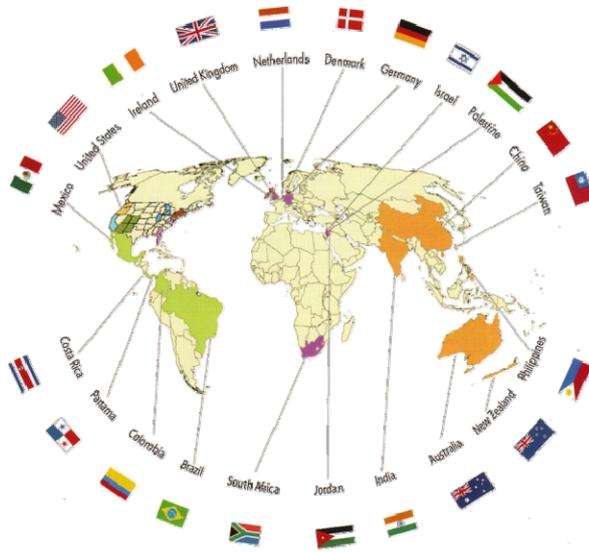


## POWERFUL IDEAS

Even more powerful than a powerful idea, is the application of powerful ideas to enhance the quality of daily life. Born as a collaboration between the MIT Media Lab and the Computer Museum (now part of the Museum of Science, Boston), the Computer Clubhouse has been a test bed for powerful ideas since it opened in 1993. A place where these ideas are not only applied, but also provoked; encouraged; harnessed; reshaped; and ultimately, generated in an ascending spiral cycle where the imagination is the limit. Ideas that come from researchers in the academia, but also from Clubhouse coordinators, network staff, volunteer mentors, community based organizations, sponsors, and most importantly, youth.

For a couple of decades Seymour Papert has been calling our attention to the relationship between children, computers and powerful ideas [2]. His ideas have been embraced by many and tried out in several contexts but, as Papert himself recognizes, "many ideas are more easily loved than implemented" [3]. Right from the beginning, the Computer Clubhouse learning approach has been inspired by powerful ideas and is in constant revision to ensure that the practice truly reflects the guiding ideas.

In a time when many people were talking about youth access to computers, the Computer Clubhouse founders were talking about access to youth's own ideas and creative thinking. When many community technology centers were looking for ways to disseminate basic computer skills, at the Clubhouse the aim was, and continues to be, giving youth cutting-edge technology and mentoring them to become technologically fluent, so that they can use this technology to express themselves [4]. The motto low-threshold/high-ceiling has informed technology selection and provided members with non-intimidating resources that, while providing initial easy access, allow for complex and more interesting applications. When the internet was mostly reserved for researchers, Clubhouse youth were tinkering with 3D-worlds, virtual reality and an online community. While most people are talking about "information technologies", Media Lab researchers are talking about "design technologies" and are committed to help other people design, create and invent [5]. At the Clubhouse, kids are encouraged to design, create and invent, to share their creations, and to reflect

both on their own and their peers' creations. The results are quite amazing! Youth from whom society had very low expectations, become capable, creative and confident learners [6].

Much like Maria Montessori carefully designed the environment, about a hundred years ago, for underserved young children to explore their world and unveil their potential [7], the Clubhouse environment was purposely designed to promote specific interactions proven to enhance learning.

Unlike typical computer rooms where computers are either in a classroom setting or around the room, in the Clubhouse, computers are arranged in clusters to promote collaboration. Chairs have wheels to allow members to easily move around in the room and there is a "green table" at the center to encourage idea sharing and collaborative activities.

One of the sought characteristics of Clubhouse learning is that it happens in a social context. Experience has shown that kids enjoy all kinds of interactions around learning. Even though they can choose to work on their own, youth frequently share several aspects of the creative process. Once a kid has an idea, s/he can go right on to implementing it or may discuss it and reshape it with others interested in the same idea.
Implementation can follow similar roads. Many Clubhouse projects are complex and require collaboration. The fact that the project is socially meaningful and relevant in the kid's culture is
a hallmark of the way projects are generated at the Clubhouse in the first place. At the other end, sharing a draft or a finished product is not only enjoyable but proves to raise the quality bar and enhance the overall learning experience [8]. Drawing the attention of others to their work and seeing it exhibited has a positive impact on confidence and self-esteem.

It is easy to misinterpret the open environment, flexibility, lack of curriculum and drop-in hours of the Computer Clubhouse as lack of structure. It is not the case that Clubhouses are unstructured, but it is fair to say that they have a different kind of structure, one that is based on a combination of freedom and support [9]. Mentoring is at the core of the Clubhouse learning approach and provides a solid support structure to promote active engagement in learning-by-design without an imposed agenda. Even though there are official volunteers called mentors, mentoring also happens at other levels. Peer-to-peer mentoring occurs spontaneously, Clubhouse managers or coordinators mentor kids and volunteers, network staff mentor coordinators and it is not unusual for a kid to be mentoring an adult. Support also comes in the form of materials designed to spark inquisitive minds.

In the Clubhouse everybody learns and enjoys doing so. Moreover, the Clubhouse culture encourages learning to learn and learning about learning. Given the characteristics of the
Clubhouse environment, this learning often occurs in groups and those groups constantly form and dissolve. A community of learners is ever emerging in the Clubhouse.

FROM CLUBHOUSE TO NETWORK
The Computer Clubhouse was not born with a vision of global expansion, but rather focused on the local community surrounding its original home at the Computer Museum in Boston. However, soon after opening, from around the corner and around the world came requests for help opening new Clubhouses. The idea of networking was not alien, since the Clubhouse started as a partnership between the Museum and the Media Lab, and soon had allies in the community and the private sector. For several years, though, it was a small network.

In the past three years, with the support of Intel Corporation, the

Network has grown to 85 Clubhouses scattered in 15 states across the United States and 15 countries in all habitable continents. Throughout its rapid expansion, the Computer Clubhouse Network has let the original powerful ideas guide the process. The Clubhouse learning approach is based on ongoing research from the fields of education, developmental and social psychology, cognitive science, and youth development around the use of new technologies to enhance learning. It takes into account the role of affect and motivation in the learning process, the importance of the social context, and the interplay between individual and community development.

The Network has been developing using the same core principles that guided the development of the Clubhouse [10]:
- Learning-by-designing
- Following your interests
- Cultivating an emergent community of learners
- Fostering an environment of respect and trust

A new Clubhouse is to the Network as a member is to the Clubhouse. Like members, new Clubhouses are encouraged to explore their own ideas and are treated with respect and trust.
Likewise, mentoring in the Clubhouse learning approach is done with the hope of achieving fluency that ultimately leads to self-expression. A geographic liaison from the network staff serves as a mentor to his/her region Clubhouses.

Key to the process, has been the idea that every Clubhouse needs to be hosted by a Community Based Organization with experience in the local community, and that the Network is an affiliation of organizations committed to the same purpose: providing opportunities for youth from underserved communities to explore their own ideas and become more capable, creative and confident learners through the use of state of-the-art technology.

The Clubhouse learning approach has evolved as the Network grows and incorporates new technologies and new ways of thinking about them. Adapting to the local culture and needs while preserving the Clubhouse guiding principles, is both a challenge and an opportunity. The Network has been greatly enriched with the addition of people from diverse states and countries as they all bring their own perspective to the table.
New mediums have been developed to allow the principles to flourish under the new circumstances.

THE COMPUTER CLUBHOUSE VILLAGE
Having grown in the advent of the internet as an ubiquitous tool, the Clubhouse Network has enjoyed what visionaries dreamed about thirty years ago: access to people and up-to-date resources regardless of physical location [1]. Spontaneously formed design teams no longer need to share the same physical space, and finding someone who shares your specific interests becomes ever more likely. The Computer Clubhouse intranet, known as the Village, provides a virtual extension of the Clubhouse environment and takes to a new level the emerging community of learners.

The current Village was developed with the following principles in mind
- Support and enhance youth creativity by sparking the design of useful things and sharing of design motivations, processes, and results
- Build on the physical and cultural characteristics of Clubhouses so that the online experience enhances and extends the productive and fun ways that youth currently interact today
- Reflect the values, aesthetic preferences, and interaction styles used by members and Clubhouse staff
- Foster communication and creation of personal relationships
- Provide recognized value and enhanced capabilities to staff members by equipping them with ways to share ideas, simplify tasks, and spend less time burdened by administrative overhead

- Be extensible to support new kinds of member activities, youth/staff interactions, and Clubhouse management needs
- Clearly represent the Clubhouse culture to new Clubhouses and members and facilitate rapid adoption of all that makes Clubhouses special

"Walking" into the Village, the visitor first encounters a sample of original work posted by members, a link to a featured member and his/her Clubhouse, local and general announcements and project ideas. There are also virtual walls to hang original work, and rooms for Clubhouse videos, tunes and voices. In addition to these options are the messages, discussions and tools for everyone, and a staff section. Unlike other online communities, the Village is more than a place for information exchange. It allows for participants not only to communicate, but also to design, create, invent in a collaborative environment.

Many visitors come to the Village for inspiration. Listening and seeing what others are doing incites them to work on their own projects. Some may build on a posted project, some may develop a new idea using a technique used by a peer, some may join forces and work together to expand a project. Often an idea travels from Clubhouse to Clubhouse and a new style is developed.

As important as sharing the finished product, it is sharing the creative process. Both are promoted in the Village. Members are encouraged to comment on each other's projects and to reflect on their learning process. Comments windows were added everywhere to facilitate discussion and feedback.

The Village has served, for over a year, as a medium for an emergening community of learners to exist and evolve. As the Clubhouse, it is a catalyst for people to learn from each other. It has also served as an object to think about those communities and to better understand their needs, opportunities and challenges.

**LOOKING TO THE FUTURE**
Using the current Village as a prototype and applying lessons learned from it, a task force with representatives from the Clubhouse Network at the Museum of Science and the MIT Media Laboratory is currently working on the development of a new Village for the Computer Clubhouse Network.

Having Clubhouses in several continents means, among other things, having a myriad of languages and cultures. Even though the Network language is English, the Village strives to be a multilingual community where members are welcome to participate in a language they feel comfortable using. As we move to the next phase of development of our intranet, we will facilitate this interchange by providing an interface in languages other than English whenever possible. This will allow participants to see the same content, while navigating in their own language. Most of the "multilingual" sites up on the web are no more than mirror sites in alternative languages. The challenge of a truly multilingual audience is to find virtual meeting spaces for people using diverse languages, just like in the Village green of a multilingual town. It will be important to identify common icons familiar to multiple cultures and to rely on them as much as possible in place of text. In the cases where graphics do not suffice, written text in international languages - as opposed to local variations or slang - will be preferred. The interface, of course, is just the beginning. It will be important to foster a multilingual culture, where people feel compelled to try to communicate beyond language barriers.

For the document library, translated versions of papers, training materials, samples, templates, forms, etc. are the ideal solution.
Translation is not only time consuming but also complex, taking into account regional variations in popular languages like Spanish and the lack of terminology in other languages for new technology and ideas. In our current Village, bilingual members have become key players to enable communication among those who

speak only one language as they spontaneously translate for others, but there is a need for a concerted effort with professional translators as we move forward.

The best way to ensure that all views are represented is to invite everybody to participate. The Village is not a finished product to be developed by experts and delivered concluded. On one hand, the outcome sought is a modular, extensible, flexible system that will be created and recreated on an ongoing basis with participation from the Network. On the other hand, even the development of that system will be through an iterative process constantly informed by youth and network staff. This should insure that the Clubhouse spirit remains alive as the

Computer Clubhouse Network continues empowering underserved youth around the world.

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## The Clubhouse Learning Approach — Guiding Principles

The Clubhouse Learning Approach is designed to empower youth from all backgrounds to become more capable, creative, and confident learners. The Clubhouse Learning Approach is grounded in research from the fields of education, developmental and social psychology, cognitive science, and youth development. It builds on research on the role of affect and motivation in the learning process, the importance of social context, and the interplay between individual and community development. It leverages new technologies to support new types of learning experiences and engage young people who have been alienated by traditional educational approaches.

### Principle 1
**Learning by Designing**
Research has shown that people learn best when they are actively engaged in exploring, experimenting, and expressing themselves, not just passively receiving information.
More and more schools are focusing on learning by- doing, involving students in hands-on activities. Computer Clubhouses follow a similar strategy, but go a step further: members don't simply get their hands on computers, they use computers to design, create, and invent things. It's not just learning-by-doing; it's learning-by-designing.

As Clubhouse members design their own illustrations, animations, robotic constructions, and music compositions, they learn valuable technical skills while also learning about the process of design and invention: how to conceptualize a project, how to make use of the materials available, how to persist and find alternatives when things go wrong, and how to view a project through the eyes of others.

### Principle 2
**Following Your Interests**
When people care about what they are working on, they are willing to work longer and harder, and they learn more in the process.

Clubhouses provide members with a great deal of choice, so that members can find projects and activities that they really care about. Members choose when to come, when to leave, what to work on, who to work with.

But running a Clubhouse is not simply a matter of letting youth do what they want. Clubhouses need to provide a great deal of support and structure to help youth identify their interests, turn them into meaningful projects, and learn from the experience. Clubhouse structure comes in many forms: the selection of software, the arrangement of furniture, the collections of sample projects, the support materials, the guidance from staff and mentors. The key is to provide choice plus structure, so that members have the freedom to follow their fantasies, but enough support to turn those fantasies into realities.

### Principal 3
**Building a Community**
When people think about thinking, they often imagine Rodin's famous sculpture The Thinker: a solitary figure, sitting by himself, with his head resting on his hand. But in the past decade, educational researchers have increasingly focused on the importance of social interactions in the ways people think and learn.
Clubhouses are designed to foster the growth of a learning community, in which youth of different ages share ideas and work together on projects, with support from staff and adult mentors. No one is assigned to work on any particular team. Rather, communities emerge over time.
Design teams form informally, coalescing around common interests. Communities are dynamic and flexible, evolving to meet the needs of the project and the

interests of the participants. Through their interactions and collaborations with a diverse community of members, staff, and mentors, Clubhouse members gain new perspectives for thinking about the world around them – and also new ways of understanding themselves.

### Principal 4
**Respect and Trust**
Communities flourish only if they are built on a foundation of respect and trust, in which people respect one another's ideas, opinions, and values.
At Clubhouses, young people are treated with trust and respect – and are expected to treat others the same way. In many settings, youth are reluctant to try out new ideas, for fear of being judged or even ridiculed. At the Clubhouse, the goal is to create an environment in which participants feel safe to experiment, explore, and innovate. Youth are given the time they need to play out their ideas; it is understood that ideas (and people) need time to develop. Clubhouse staff and mentors do not simply dole out praise to improve the "self esteem" of the youth. They treat youth more like colleagues, giving them genuine feedback, and pushing them to consider new possibilities. They are always asking: What could you do next? What other ideas do you have?

The Clubhouse Learning Approach shares many ideas and goals with educational-reform initiatives.

| Traditional Classroom | Educational Reform |
|---|---|
| Acquire facts, information | Learn through hands-on inquiry |
| Students work alone | Students collaborate |
| Learning isolated skills | Learning skills in context |
| Focus on memorization | Focus on understanding |
| Short-term assignments | Long-term projects |
| Separate disciplines | Connections among disciplines |
| One lesson fits all | Support different learning styles |
| Teacher: sage on the stage | Teacher: guide on the side |

**The Clubhouse Learning Approach — Reflection**

When designing things, we too often stop after the first two steps of the design process: coming up with ideas ("imagine") and making them come to life ("realize"). These two steps alone seem like such an accomplishment, who could ask for more? But without critiquing and reflecting on the things we've created, we miss out on many important opportunities to improve our creations, learn new things, and share our ideas with others.

**Why Reflect?**
We build up understanding through our experience in the world. But until we reflect – that is, until we engage in explaining not just what we do, but why we do what we do – this understanding remains just "intuitive": something we feel in our gut and can do almost on auto-pilot. We can see examples of intuitive understanding in the ways Clubhouse members use their tools and in the ways the best mentors work with one another and with youth.
The process of reflection helps us to develop our understanding more deeply and to make our intuitive knowledge shareable with others. It provides the opportunity to step back and take a look at what our work means to us and our communities.

How can we help people in the Clubhouse community, both members and mentors, reflect on their work, so that they can recognize their own intuitive understandings, develop them further, and explore new directions?

Critique often happens informally within the Clubhouse: people admire the innovations that they witness in one another's work, and sometimes make comments and suggestions. This practice of respectful critique can provide a context for reflection.

Every once in a while, encourage yourself and others to take a moment to reflect and make explicit what you have discovered in your work. Share this with others. Ask questions to understand experiences that you may have overlooked in your day-to-day work. By reflecting we can grow and develop our understanding more deeply, so that our work continues to improve the next time we roll through the design process.

### A Culture of Reflection

The Reggio Emilia preschools, in a small town in Italy, provide an example of how critique and reflection can be woven into the fabric of learning and education. The Reggio schools focus on discovering how kids and teachers know what they know, emphasizing *how* things are made as much as *what* is made. The examples of children's work on the walls of the schools show not only the final products, but also documentation of the process: the steps along the way, the struggles they overcame, the breakthroughs. By highlighting the process, learning becomes the central focus of the community.

How might we similarly foster a culture of reflection in Clubhouses?

**The Clubhouse Learning Approach** — **Technological Fluency**

What does it mean to be technologically fluent? Consider the analogy with learning a foreign language. Imagine someone who learned a few phrases so that they could read menus in restaurants and ask for directions on the street. Would you consider them fluent in the language? Certainly not. That type of phrase-book knowledge is equivalent to way most people use computers today. Is such knowledge useful? Yes. But it's not fluency. To be truly fluent in a foreign language, you must be able to articulate a complex idea or tell an engaging story – that is, you must be able to "make things" with language. Similarly, being technologically fluent involves not only knowing how to use technological tools, but also knowing how to construct things of significance with those tools.

**Ability to *use* the computer**
- Using basic features of the operating system
- Using standard application programs (word processor, drawing tools, …)
- Searching/finding/evaluating information on the Internet

**Ability to *learn new ways* of using the computer**
- Learning new features of a program as needed
- Learning new tools and programs
- Feeling comfortable and confident about learning new features/programs
- Making use of multiple tools/programs on a project
- Customizing programs to fit your needs
- Using a feature or program in unobvious ways

**Ability to *create* things with the computer**
- Creating images, animations, songs, videos, robotic constructions, …
- Revising your creations
- "Debugging" your creations when something goes wrong
- Understanding the range of what's possible to create with a given tool
- Iteratively modifying and extending your creations (and your ideas)
- Writing computer programs to create more expressive projects
- Over time, creating artifacts with more features and richer interaction

**Ability to create things based on** *your own ideas*
- Generating ideas for what you want to create
- Developing a project from an initial inspiration to a finished work
- Choosing tool/program that's appropriate for what you want to create
- Over time, incorporating more of your feelings/ideas into your creations

**Ability to use technology to** *contribute* **to the surrounding community**
- Sharing ideas and projects with others in the community
- Collaborating on projects with others in the community
- Modifying and extending projects created by others in the community
- Helping others learn new features, programs, and ideas
- Creating things that are meaningful to the community around you

**Understanding** *concepts* **related to technological activities**
 Some examples:
- Understanding perspective when creating images
- Understanding sensing and feedback in robotics project
- Understanding mathematics to coordinate objects in animation
- Understanding programming concepts: variables, conditionals
- Using these concepts in other contexts and situations
- Using a systematic/scientific approach to design and problem-solving

The Clubhouse Learning Approach — **Structure**

People sometimes describe the Computer Clubhouse learning approach as "unstructured," in contrast to the "structure" of traditional school classrooms.

But that description isn't right: Clubhouses aren't unstructured; rather, they're based on a different kind of structure.

One of the keys to the Clubhouse approach is allowing kids to work on projects that they really care about. Clubhouse members should have the freedom to follow their fantasies. But in order to turn those fantasies into realities, they need support and structure.

Not traditional classroom structure, but a different kind of structure that combines freedom and support.

**Types of Clubhouse structure**

Clubhouse structure comes in many forms. Here are seven S's of Clubhouse structure: The **software** in Clubhouses is selected specifically to support design-based projects, especially projects that integrate art, science, and technology.

**Sample projects** on the walls serve as inspiration and give new members a sense of what's possible at the Clubhouse.

**Support materials** (such as Sparks) help members get started on new projects.

The **setting** influences interactions in the Clubhouse. Furniture is arranged in clusters to encourage collaboration. The green table is designed to serve as a meeting place for discussions and hands-on activities, and the rolling chairs make it easier for members to get together and share ideas.

**Special events**, such as exhibitions of members' work, serve as catalysts for members to refine and share their projects, and give members a sense of belonging to a larger community.

**Special programs**, such as C2C, are designed to help members get a sense of the possibilities and opportunities beyond the Clubhouse.

**Staff** and mentors of the Clubhouse serve as coaches and catalysts, providing members with inspiration, support, and guidance.

**What structure is appropriate?**

Within the Clubhouse community, we need to have continuing discussions on what types of structure are appropriate (and most effective) for Clubhouses.

For example: Is it appropriate for a mentor to run a series of workshops to introduce members to a new technique (say, making animated comic strips)?

I've heard some people say that such workshops would make the Clubhouse too much like school. But, in my mind, such workshops can play an important role in helping members get started on new projects – and they are very much in the Clubhouse spirit, since members can choose whether or not they want to participate.

What types of structures do you think are needed to make your Clubhouse more successful? Are you worried that some types of structure might be inconsistent with the Clubhouse approach?

**Further reading...**
*Freedom and Beyond*, by John Holt (1972)
For more discussion on these issues, see the Clubhouse Structure thread inside The Clubhouse Approach topic in the Discussions area of the Village.

## The Clubhouse Learning Approach — Social Networks

### The importance of our social networks
In the knowledge society, in addition to technical skills and access to information technologies, it is becoming increasingly important for people to have diversified and supportive social connections. Although resources and opportunities may be available, one may not necessarily be aware of their existence, or even have direct access to them. In those cases, knowing people from different backgrounds, grades of expertise, and social levels turns out to be essential. For instance, who among us has never required a letter of recommendation in order to get a job, or had to rely on somebody else's knowledge in order to find a specific doctor? Isn't it through word of mouth that many kids get to know about the Clubhouse?

### Strong and weak ties
Throughout our lives, we tend to form different kinds of relationships with different people. With people like us, our greatest buddies and closer relatives, we establish strong ties that reinforce our beliefs and provide us with the support required to endure life's challenges. With other people, with whom we usually do not have such in-depth connections, we develop weaker ties that help us address a larger variety of perhaps more specific needs. Even though we usually don't pay too much attention to our weak ties, some authors say that it is through them that we become aware of new opportunities and broaden our horizons.

Some studies even demonstrate that, when searching for a job, in some cases having a wide network of weak ties is equally or more important than having strong personal skills.

### Teenagers and social networks
In terms of personal development, one can understand adolescence as a time when young people strive to go beyond local family ties to build a social network more in tune with their own values and that allows them to explore new things in the world with their own legs. In that phase, the quality of the human support available, the different role models that kids have access to, and the kinds of relationships that they engage in turn out to be extremely influential for the rest of their lives.

### Computer Clubhouses as social hubs
Based on the ideas described above, one can imagine that, in many ways, the 'club' aspect of the Computer Clubhouse is more important than the impressive technologies that are available there. As managers and mentors, we should make sure that the social opportunities that members experience are really the best for their age and condition. In order to do so, we should create activities in which kids get to know more about what happens beyond the Clubhouse walls, bring people who care to interact with them side-by-side, reflect about the

people that they know, and develop an environment that helps them see the world as a supportive and resourceful place to live in. What do you think?

## The Clubhouse Learning Approach — Motivation

### Resorting to Rewards

In our society, when young people show a lack of interest, a typical reaction is to offer rewards to increase their motivation. For example, if students aren't interested in reading, a typical solution is to offer prizes for whoever reads the greatest number of books.

In the short-term, prizes can increase student interest in participating in a reading program. The problem is, students then become focused on the prizes rather than in what they are reading. Once the prizes have been given out, students are even less likely to view reading as something they would choose to do on their own. ("Why should I read unless I am rewarded for it?")

Dozens of research studies over the past 25 years across age groups and cultures have shown that using external rewards actually have the unintended effect of decreasing motivation in the long-term. Researchers on motivation contrast "extrinsic motivation" that comes from offering external incentives with "intrinsic motivation" which means interest in an activity for its own sake (such as reading because you are interested in the story or topic of the book).

### Interests Provide Energy for Learning

One of the most valuable natural resources young people have is their interests. Once they become interested in a topic – for example, a sport (such as basketball), an animal (such as horses), or a style of music (such as hip-hop) – they seek out opportunities to learn more. Kids who are seen as having short attention spans can become very focused and spend long period of time on topics that interest them.

Rather than resorting to rewards, the challenge within the Clubhouse is how to leverage the motivation that comes from pursuing and building upon young people's and mentors' interests.

### Focusing on Effort Rather than Ability

A natural impulse when seeing a young person with interest and ability is to offer praise by saying something like, "You're good at drawing!" However, professor Carol Dweck at Columbia University has found that, contrary to popular belief, praise for young people's abilities actually decreases motivation to overcome obstacles.

She and her colleagues compared the effects of two kinds of praise: praise for ability ("you're good at this") vs. praise for effort ("you worked hard at this"). They found that praising young people's abilities increased motivation – but only as long as they were doing well. Once these young people encountered difficulties, they reacted by selecting easier problems that would make them look good and avoiding further challenges. In contrast, praising young people's efforts increased motivation even in the face of difficulties, and led them to seek out further challenges.

How does this compare with your own experience with praise, rewards, and motivation? What strategies or approaches have you found useful for encouraging young people to pursue their interests and try new challenges?

## The Clubhouse Learning Approach — Learning by Designing

When people think about learning and education, they often think about one person transmitting information to another, like this: Increasingly, educators are recognizing that this "transmission approach" doesn't work very well. Research has shown that people learn best not when they are passively receiving information, but when they are actively engaged in exploring, experimenting, and expressing themselves (sometimes known as the 3 X's).

More and more schools are focusing on learning-by-doing, engaging students in hands-on activities. Computer Clubhouses follow a similar strategy, but go a step further: members don't simply get their hands on computers, they use computers to design, create, and invent things. It's not just learning by- doing; it's learning-by-designing.

### Why Design?

Design projects engage kids as active participants, giving them a greater sense of control and responsibility for the learning process.

Design projects encourage creative problem-solving.

Design projects are often interdisciplinary, bringing together ideas from art, technology, math, and sciences.

Design projects help kids learn to put themselves in the minds of others, since they need to consider how others will use the things they create.

Design projects provide opportunities for reflection and collaboration.

Design projects set up a positive-feedback loop of learning: when kids design things, they get new ideas, leading them to design new things, from which they get even more ideas, leading them to design yet more things, and so on.

### Constructivism and Constructionism

The Clubhouse learning-by-designing approach is inspired by two important theories of learning and education.

The *constructivist* theory of learning, developed by Swiss psychologist Jean Piaget, views learning as a very active process in which people continually construct new knowledge from their experiences in the world.

According to this theory, people don't *get* ideas, they *make* them. Constructivist theory is the underpinning for many educational reform initiatives.

The *constructionist* approach to education, developed by MIT professor Seymour Papert, is based on two types of construction: it argues that people construct new knowledge especially well when they are engaged in constructing things in the world.

They might be constructing sand castles, LEGO machines, or computer programs. What's important is that they are actively engaged in creating something meaningful to themselves or others around them.

Mitch Resnick