AIM CoderDojo Play Book

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CoderDojo is defined as "an open source, volunteer led movement orientated around running free not-for-profit coding clubs and regular sessions for young people." (coderdojo.com) Beginning in Ireland in 2011, CoderDojos now take place around the world and have allowed students to learn programming languages for the purpose of creating websites, games, apps, and more. CoderDojos encourage collaboration among youth and are sustained by volunteers and community partnerships.

Customer Analysis

Identifying the Market

The ideal market for a CoderDojo is one in which there is not currently an active CoderDojo and that also has limited technology activities for youth -- particularly those which are free. Size of the community is not significant, though it's important to gain an understanding of the overall socio-economic climate, the values of the community, the existence of companies and businesses that employ IT workers, and the types of schools in the area (school districts, community colleges, and 4 year colleges and universities). Researching this information in advance is important in identifying supporters and obtaining buy-in from families, professionals, and educators.

Ideal Prospect

Although youth ages 8-17 are the ones who will ultimately benefit from CoderDojos and could therefore be identified as the "prospects," it's also important to consider IT professionals and educators as prospects as well. Youth prospects need simply to have an interest in technology, with or without much previous experience. They need to be able to identify with some basic technology such as games, computers, and mobile devices but need not have prior formal education in these things.

IT professionals who are considered as prospects must have an interest in promoting technology to youth. They must have enough experience in one or more programming languages so that they are comfortable with introducing a language through open source and free resources. These professionals must also have time to volunteer for one or more CoderDojo sessions and be willing to both share and receive ideas and feedback pertaining to mentorship for CoderDojo.

Lastly, prospective educators are those who also have a desire to promote technology to youth and who are willing to do so outside of a formal curriculum. In smaller communities, it's important to communicate with key education administrators so that they are aware of the CoderDojo concept and can help in promoting it. Some educators with a technology background may be able to serve as mentors and/or lend expertise in working with youth and technology. Be cautious not to partner directly with a school district, as it's preferable to keep the opportunity open to other kids in the area as well.

Behaviors Exhibited by a Qualified Lead

A "lead" for a CoderDojo is an individual or organization willing to donate space, time, or other resources to sustain the CoderDojo. These may include volunteers (mentors, greeters, etc), companies or schools willing to donate space (including wireless internet), and organizations that donate technology equipment and/or monetary resources. Qualified leads will recognize AIM's role as the primary champion of the CoderDojo and will not use this involvement as a way of promoting other agendas or targeting exclusive audiences of youth.

AIM Value Proposition

As part of its youth mission, AIM seeks to promote technology among youth and also to help students with an interest in technology to further develop their skills. CoderDojo addresses both of these initiatives by welcoming youth ages 8-17 with varying levels of technology experience. Through the guidance of IT professionals and educators serving as mentors, the youth served have an opportunity to learn new programming languages and applications and/or further develop existing technology skills.

Because many schools are limited by time, staff resources, and also the curriculum itself, they are typically not able to focus specifically on the teaching of computer programming. Schools that offer such courses often serve a limited audience of students. By nature, the CoderDojo provides an informal teaching environment in which beginners as well as youth with more advanced technology experience can learn and explore the concept of programming at their own pace, using their own creativity.

Competitive Analysis

Objections to CoderDojo

Because CoderDojo is an informal arrangement in which programming is "mentored," rather than taught, an objection may be that it is absent of traditional teaching elements such as learning objectives, a standard and/or replicable curriculum, and involvement of a lead teacher.

Secondly, there is currently not an instrument in place to measure whether CoderDojo is indeed effective in teaching programming, whether kids who are involved can demonstrate specific skills because of their involvement, and also whether it has any impact on kids entering the "IT Pipeline" of education and careers specific to technology.

Lastly, CoderDojo sessions are limited to a set number of students based on elements such as resources, space, and availability of mentors. Therefore, it is unable to serve all that are interested. In fact, it is not uncommon for a CoderDojo to have a wait list of kids for any given session.

Answers to Objections

Although it is not a structured or traditional model of teaching, CoderDojo is attractive to youth around the world because of this very reason. Particularly for students who do not yet have a lot of technology experience, the opportunity to be creative and to learn at one's own pace without having to "produce," take the pressure off of learning an otherwise complicated skill. This informal setting also allows kids to

naturally collaborate with one another on common interests and skills. Kids are encouraged to show others what they've done, to help each other troubleshoot programming challenges, and to work on projects together.

Though there is not yet an instrument of measuring the effectiveness of CoderDojo, its global impact cannot be denied. Since 2011 when the first CoderDojos began in Ireland, there have been 354 CoderDojos that have started in 38 countries. This number continues to increase, and existing CoderDojos have found the need to increase the numbers and types of sessions they offer in order to accommodate the wait listed students.

CoderDojos are indeed limited in terms of the number of students each session can serve. It is recommended that CoderDojo sessions allow for a 1:3 ratio of mentors to kids. This ensures that kids receive the direction and encouragement they need to learn a new skill. It also promotes the idea of kids collaborating in small groups, rather than feeling isolated or frustrated. Assuming that space and resources can accommodate the growth, having more mentors involved would allow additional kids to participate in a session.

Competitors

CoderDojo is in competition with all other extra-curricular activities presented to youth. When offered after school or in the evening, kids must choose between CoderDojo or other involvements such as music practice, sports, clubs, or church and community organizations. When offered on Saturdays, CoderDojos are competing with family time, community sports leagues, and/or travel.

Other competitors may include technology specific opportunities for youth offered through post secondary institutions or other organizations. Because of the recent emphasis on teaching youth how to code, there may already be a variety of coding events, hackathons, and "Hour of Code" initiatives in a community.

Answers to Competitors

Despite the number of demands on kids' schedules, CoderDojos present a unique opportunity that many kids as well as parents find valuable. Being that's it's a free event as well as a series of open sessions that don't build on each other, families view it as a somewhat "risk free" endeavor. Kids who have not found a niche in sports or other involvements have another option in which they can connect with peers who have similar interests. Also, because of the popularity of video and computer games, parents see CoderDojo as a way in which students can make productive use of technology. Rather than simply playing games, kids are learning how to program games themselves.

Having a variety of other technology events available in a community is positive in that kids have multiple opportunities in which to develop important technology skills. However, many of the technology offerings for youth are either expensive to some families, are limited to kids only in a certain school district or age range, or are one-time events or competitions. By offering multiple CoderDojo sessions, kids have the option of attending once or attending multiple times in order to continuously build on their skills.

A Typical CoderDojo Model

The CoderDojo Model can best be summarized as an open source, volunteer led coding club for youth. There is no standard curriculum, and CoderDojos are encouraged to use the variety of open source resources that are readily available online. Websites such as *khanacademy.org, starterleague.com, codepen.io, scratch.mit.edu, and jsbin.com* are examples of sites that the youth and mentors can access for free in order to work with a variety of programming languages in a tutorial format. If funding or donations are available, CoderDojos may also utilize technology pieces such as Raspberry Pi, Arduino kits, robotics, Minecraft licenses, etc. for the purpose of teaching programming.

CoderDojos are led completely by volunteers serving as mentors or in fulfilling other roles. Mentors are IT professionals and educators who have a passion for promoting technology to youth and who have the time to dedicate to one or more CoderDojo sessions. It is their expertise (in programming languages, website development, mobile app creation, etc) that may determine the theme for most CoderDojo sessions. Other volunteer roles may include greeters and "front desk" assistants at each session. These roles are often filled by members of the champion organization, other mentors or educators, and even parents.

The fact that the CoderDojo is described as a "coding club" rather than as a class means that it is informal, fun, and not structured in the same manner as a typical classroom experience. There is one universal rule of all CoderDojos, and that's "be cool." This means that the attitudes and behaviors that youth and adults bring to the CoderDojo should be agreeable to all. Disrespect, wasting time, limiting creativity, etc. are not "cool" and therefore should not be modeled at a CoderDojo.

Components of a New CoderDojo

The CoderDojo model consists of the following elements: a *champion*, a *venue,* a *team of volunteers and mentors*, *open source resources*, and *youth ages 8-17*.

-- **Champion** -- the person or organization who takes the initiative to organize the CoderDojo

-- **Venue** -- a space (preferably one that is donated) that can accommodate technology equipment (laptops, tablets, etc), wireless internet, and collaborative space. This could include a classroom or computer lab, a company lobby or cafeteria, a community center with tables and chairs, or an open area with bean bags and cushions in lieu of chairs.

-- **Team of Volunteers and Mentors** -- the people supporting the CoderDojos and who are interacting with the youth and families. General volunteers filling the role of greeters and "front desk" assistants (signing in kids, distributing nametags, etc) can be co-workers, community members, college students, parents, etc. Mentors must be individuals such as IT professionals and educators who have a background in programming and/or other technology applications. Mentors who are not currently K-12 educators, must complete a background check before interacting with youth.

-- **Open Source Resources** -- access to free websites that interactively teach computer programming skills

-- **Youth ages 8-17** -- kids recruited from schools, youth organizations, home school networks, or through publications targeted at their parents (such as AIM or school newsletters). It's preferable that CoderDojos are open to a variety of kids and not just an exclusive group such as a particular school district, club, organization, etc.

A CoderDojo should be organized by following the steps outlined on coderdojo.org The steps include:

1. Becoming a champion
2. Set a date
3. Find a venue
4. Gather your team
5. Promote your Dojo

1. **Becoming a champion** -- AIM is considered the "champion, " or the organization that is involved with organizing the CoderDojo. Therefore, all following steps will be executed by the appointed AIM staff person(s) involved in the community. At least initially, the champion handles administrative work such as registration, creating name tags, reminding families of upcoming events, and creating/compiling evaluative surveys.

2. **Set a date** -- A CoderDojo rule of thumb is "nothing will happen until you set a date." Before considering location, themes, or volunteers, create a schedule of CoderDojos. A number of larger communities choose to offer these on two Saturdays per month. Smaller communities may find that evening sessions are preferred. Refer to community and/or school calendars to avoid major conflicts if needed, but then simply set your preferred dates/times. It's possible that these may need to be adjusted later, but it's important to start with this.

3. **Find a venue** -- In keeping with the "be cool" rule of CoderDojo, seek spaces that are unique. Though computer labs work well, also look at areas that have tables and chairs or other non-traditional layouts in contrast to classrooms. Consider businesses, schools, and colleges that have worked well with AIM in the past, but also see this as an opportunity to interact with new businesses as well -- particularly those with a strong IT focus. Identify key contacts to approach, and explain the CoderDojo and its service to youth. Ask for space that will accommodate a minimum of 30 people and that has accessible wireless internet. Share your proposed schedule and negotiate dates and times if needed. If a business agrees to donate space, offer to include their company logo on marketing materials.

4. **Gather your team** -- Begin seeking mentors by putting together a brief description of their role, qualifications (such as experience in one or more programming languages), and a list of dates and times. Work with Careerlink staff in placing a formal ad for this volunteer position, and also include the blurb in the AIM newsletter. Reach out to technology companies, businesses with a large IT staff, technology user groups, and computer science instructors at both the high school and college level. Encourage recruitment of college students as mentors as well.

As interested individuals respond to the Careerlink ad or contact the champion directly, provide them with a survey that inquires about their technology skills (particularly programming languages) and preferred dates/times to attend a an orientation meeting. Because they will be working with a youth population, background checks are required. AIM uses One Source for running background checks. Work with the HR staff person at AIM to determine how to proceed with access to One Source, and then provide the mentors with the appropriate forms.

Once a large number of mentors have been gathered (approximately 20 or more), set a date for a mentor orientation based on the availability of the majority. This should be a laid back gathering involving food and drink in which you introduce the mentors to the CoderDojo concept, allow them to get to know each other, and answer any questions they have. Include a brief presentation by someone experienced with engaging youth with technology, such as an educator or other youth program coordinator. Because some of the mentors may have little or no experience in working with youth, this piece is important. At the meeting, have the mentors begin signing up for the CoderDojo dates.

In addition to the mentors, consider other adults who could volunteer as greeters at the CoderDojo sessions and/or fill other roles. The AIM Unity Council is helpful in recruiting volunteers from within the AIM organization, but also consider educators and business acquaintances as well. Share the dates with them and recruit 2-3 volunteers per event, based on size. Down the road, consider recruiting parents of kids who frequently attend.

5. **Promote your Dojo** -- First, determine the format for the CoderDojo. Look at the areas of expertise of the mentors and base your session themes on that. If many have experience in Scratch,

offer that as a session for younger kids. If it's in a particular programming language, consider that as a session for older kids. If website design, mobile app development, or Minecraft mod creation are popular among the mentors, consider one or more of these as well. If space and number of mentors allow, you can have multiple sessions occurring at the same time. *Note that it is common CoderDojo practice that kids under the age of 12 are accompanied by a parent.*

Next, register your CoderDojo at zen.coderdojo.com This literally puts your CoderDojo "on the map" and is a place for those who are seeking a CoderDojo to see that one exists in your area. This also allows you to enter dates, locations, and a link to the registration.

The AIM Events staff will assist in determining the best way to register participants. This needs to be an online process that allows you to easily view the list of kids who have registered as well as their parent contact information. There also needs to be a waitlist option so that kids who are interested can be invited if space becomes available.

Work with the Marketing team in getting the information and registration link on the the AIM website and in creating promotional emails and flyers. Make sure that all information clearly defines what a CoderDojo is, the dates and times, age range, and requirement of parental involvement if audience is 12 or under. Share this information in the AIM newsletter, on social media (with help from Marketing), and in emails to schools, home school networks, and/or clubs and organizations. Also share it with the mentors and ask them to spread the word. Based on your community size, determine the best way to get the word out to families. Newspapers and other media may be appropriate for smaller communities but not necessarily for larger cities where there could be an influx of registrants . Information will spread quickly through word of mouth, so let others promote your CoderDojo for you!

Other Considerations

-- Many CoderDojos offer sessions that are 2 hours long. For older kids, this seems to be an adequate amount of time to actively work on something. Younger kids may work better with shorter time, like 60-90 minutes.
-- If you do not have technology such as computers, laptops, tablets, or other devices available for kids to use, indicate up front (such as on the registration form) that they need to bring their own device to the CoderDojo.
-- Consider creating a resource guide for mentors and/or kids that has useful open source websites and other tips. One example is Scratch tutorials that can be printed for use during Scratch CoderDojo sessions.
-- Continue to allow mentors to apply, even after the CoderDojo has begun. More mentors means that more kids can eventually participate.
-- Always double check with the venue in advance to make sure they are ready for the CoderDojo. Determine table/chair arrangements, internet accessibility, and other needs.
-- Provide media release forms as part of the registration process and also as hard copies at the CoderDojo sessions. Parents need to give their permission for their child's photo to be used in AIM or other publications.
-- Take pictures at the CoderDojos and post to AIM Twitter and Facebook sites.

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