Mike Hahn – hahnbytes@gmail.com

LyvaTeach

This PDF file consists of the entirety of the LyvaTeach website, which links paid and volunteer tutors with those needing instruction. Paid tutors charge an hourly rate (billing their students directly), and must pay 7 percent of their earnings to LyvaTeach.org. All tutoring sessions are one-on-one and usually take place in coffee shops, libraries, or high schools (Skype can be used instead of meeting face-to-face). Sessions involving students who are under 18 take place in their homes, when a parent is also at home. All tutors (and students who use the Curriculum Library) must have smartphones or tablets. Each tutor records the amount of time spent teaching each lesson at the end of each session, and also each student evaluates the tutor (on a scale of 1 to 5, overall and on various attributes) at the end of each session. Students can also record comments (customer reviews), which are accessible to other students browsing the tutor database. Under-performing tutors gravitate to the bottom of the search results.

Website

Students select their city and search for tutors, filtering by desired subject, and the tutors are sorted by experience (total minutes) or quality, based on tutor evaluations. Each tutor has an info page, including the subjects they teach, along with experience level and quality level for each subject. The info page also includes major intersection (closest to where they live) and availability times (days of week, mornings, afternoons, and/or evenings). When contacting a prospective tutor, the student selects the desired subject(s), enters an optional message, and clicks on Contact. The tutor then receives an automatic email, and logs on to the website and responds, if desired. Every lesson is delivered to the student in a form which is easily displayed on a smartphone.

Revenue and Expenses

All revenue comes from the 7 percent cut of the paid tutors' earnings. Fixed expenses include web hosting fees and Google AdWords advertising. All partners (the highest ranking of the 6 classes of users) as well as the senior developer (the founder) receive an equal share of the profits. For the first 6 months only volunteer tutors in Toronto will be recruited.

LyvaTags Curriculum

All curricula exists in the form of Wiki-style documents, similar to Wikipedia articles. My own Wiki-style markup language (called LyvaTags) is used to both read and write the lessons. Content-creators use the Windows Writer App, and students use the Android/iOS Reader Apps to display the lessons. Content is encrypted to prevent plagiarism. LyvaTags adds support for tables, grids, and multiple columns. Grids are used for entering mathematical expressions, and adjacent grid cells may be merged to accommodate oversized characters (superscripts/subscripts are handled by adding a vertical offset of half a character). Educators use the built-in Lyvathon scripting language (similar to Python) to develop web-based educational software hosted at LyvaTeach.org. Both Lyvathon and LyvaTags are open source projects written in Java, and the rest of LyvaTeach is also written in Java.

Mentors

LyvaTeach has 6 classes of users: developers like me who maintain the website, partners who decide which tutors can become mentors, mentors who are tutors which supervise content creators and other tutors, content creators who write the lessons (and educational software) used by the tutors, tutors who are supervised by mentors, and students. Every tutor who is not a mentor is assigned a mentor. Those tutors who have logged the most hours (in the top 20 percent) and with superior ratings as given by their students (in the top 40 percent) are eligible to become mentors. When tutors are assigned to mentors, preference is given to those mentors who have the fewest tutors assigned to them. Mentors don't have to pay 7 percent of their earnings to LyvaTeach. Those mentors who have logged the most hours (in the top 20 percent) and with superior ratings as given by their students (in the top 40 percent) automatically become partners.

Business Plan: Steps

1. Learn server-side Java programming
2. Implement Java version of Plicathon.com, which is an image-collection organizer
3. Approach West Neighbourhood House as partner organization
4. If successful, go to Step 6
5. Approach 3 contacts who are educators (Ellen Davis, Eric Davis, Carla Silver)
6. Partner organization/contact helps recruit CCD
7. Hire Core Curriculum Developer (CCD)
8. CCD (a volunteer) writes literacy curriculum
9. Mike or CCD writes math curriculum
10. Curriculum written using Word, then converted to PDF
11. Continue developing website
12. Convert curriculum to LyvaTags
13. Develop LyvaTags Reader, an Android app (eventually develop iOS version)
14. Launch website
15. Develop LyvaTags Writer, a Windows app
16. Revenue Sources (Royalties):
    1. Paid tutors pay LyvaTeach consisting of 7 percent of the amount they charge to their students
17. Operating Expenses:
    1. Web hosting + Google AdWords advertising + Partner remuneration
18. Calculation of partner remuneration:
    1. Let k = 52 weeks/year x 7 percent = 3.64
    2. Let h = hrs/week = 5
    3. Let r = rate/hr = 25
    4. Let $x1$ = no. of tutors/mentor = 6
    5. Let $x2$ = no. of mentors/partner = 10
    6. Let p = no. of tutors/partner = $(x1)(x2)$ = 60
    7. Let n = no. of partners
    8. Let t = no. of paid tutors
    9. Then $t = pn = 60n$
    10. Let f = fixed costs = web + adv = 2000 + 5000 = 7000 (for n = 1 up to 5)
    11. And f = 7500 + 5000 = 12,500 (for $n > 5$)
    12. Gross revenue = 5 hours/week/tutor x \$25/hour x 52 weeks/year x 0.07 = \$455/year/tutor
    13. Gross annual revenue/partner = \$455/tutor x 6 tutors/mentor x 10 mentors/partner = \$27,300
    14. Assume that 600 paid tutors exist
    15. Gross revenue = \$455/year/tutor x 600 tutors = \$273,000/year
    16. Operating expenses = web hosting + AdWords advertising = \$7500 + 5000 = \$12,500/year
    17. Profit = \$273,000/year - \$12,500/year = \$260,500/year
    18. No. of partners = 600 tutors / (6 tutors/mentor x 10 mentors/partner) = 10
    19. Adjusted no. of partners = 10 + 2 = 12 (Mike and the partner organization count as 2 partners)
    20. Let R = Net annual revenue/partner = profit divided by 12 = \$260,500 / 12 = \$21,708
    21. n = (1,2,3,4,5,10)
    22. n' = n + 2 = adjusted value of n (Mike and the partner organization count as 2 partners)
    23. $R = khrp(n / n') - (f / n')$
    24. $R = khrp(n / (n + 2)) - (f / (n + 2))$
    25. $khrp$ = 27,300
    26. $R1 = (27,300 \times (1/3)) - (7,000 / 3) = 6,767$
    27. $R2 = (27,300 \times (2/4)) - (7,000 / 4) = 11,900$
    28. $R3 = (27,300 \times (3/5)) - (7,000 / 5) = 14,980$
    29. $R4 = (27,300 \times (4/6)) - (7,000 / 6) = 17,033$
    30. $R5 = (27,300 \times (5/7)) - (7,000 / 7) = 18,500$
    31. $R10 = (27,300 \times (10/12)) - (12,500 / 12) = 21,708$
    32. $R1000 = (27,300 \times (1000/1002)) - (12,500 / 1002) = 27,233 < 27,300$ for all n

19. Partner Definition:
    1. Mentors are tutors who supervise content creators and other tutors
    2. Content creators write the lessons used by the tutors
    3. Partners decide which tutors can become mentors
    4. Those tutors who are in the top 20 percent of hours logged, and in the top 40 percent of the ratings given by students, are eligible to become mentors
    5. Those mentors who are in the top 20 percent of hours logged, and in the top 40 percent of the ratings given by students, automatically become partners

Business Plan Background

Mike is currently a volunteer computer tutor at West Neighbourhood House, and was a volunteer tutor at Fred Victor for 5 years, teaching math, computers, and literacy. West Neighbourhood House also employs volunteer tutors who teach math and literacy.

Mike's contacts who are educators are: his cousin Ellen Davis, a retired ESL teacher; his cousin Eric Davis, a senior administrator at the University of the Fraser Valley; and Carla Silver, a high school music teacher.

Role of West Neighbourhood House

West Neighbourhood House would provide a location for quarterly board meetings of LyvaTeach. Also, WNH would recruit 2 LyvaTeach board members, who can be employees or volunteers with WNH, or even board members of WNH. I would chair the quarterly board meetings (which may be held more frequently than quarterly after LyvaTeach goes live), and I would also use Specialisterne to help me recruit a 4th board member who is on the autism spectrum. Specialisterne helps find IT jobs for those on the autism spectrum. The board meetings can be held after hours at Bang The Drum, or some other room that has WiFi or a computer connected to the Internet.

Benefits to West Neighbourhood House

1. West Neighbourhood House receives the same amount of money that each partner receives. Please see Steps 18.20 thru 18.32 in Business Plan: Steps for approximate value(s).

2. When tutors and students log in to the LyvaTeach website, a link to the Learning Programs web page at westnh.org is displayed, assuming that the person logging in lives in Toronto. All users can click on "Donate to Partner", which displays info about West Neighbourhood House and a link to its donation web page.

3. All WNH tutors have the option of becoming LyvaTeach tutors/content-creators, and all LyvaTeach tutors/content-creators who live in Toronto have the option of becoming WNH tutors.

Competition

LyvaTeach faces at least 3 competitors: KhanAcademy.org, UniversityTutor.com, and Tutoring-Beyond-Borders.com. Khan Academy has thousands of online courses, but little or no face-to-face instruction. University Tutor has 100,000 tutors in 8500 cities, but no curriculum library (the tutors, paid only, are on their own). Tutoring Beyond Borders is free but only operates in the Kitchener area.

LyvaTags Format

Simple Tag	`{<taghdr>}`	
Container Tag	`{<taghdr>	<body>}`	
List Tag	`{<taghdr> <list>}`	
Body List Tag	`{<taghdr> <bodlst>}`	
<bodlst>	`[	<body>]*`	
<list>	`[<col>]*`	
<col>	`| [<fldval>]*	<body>`	
<taghdr>	`<tagname> [<fldval>]*`	
<fldval>	`fldname=value;`	
<body>	body text	
Vert. Grid Line	`|`	
Horiz. Grid Line	underscore (_)	
Grid Intersection	plus (+)	
Escape Char.	backslash (\)	
Lyvathon Code	`{% ... %}`	
Lyvathon Expr.	`{{ ... }}`	

Repetition: `[ XYZ ]*`
- *XYZ* repeats zero or more times

Tag Names:
- table, row, grid
- dtab (*use* <div> *for table*)
- super, sub, text, pre, br, hr, img, a, ch
- input, radio, checkbox
- styles, include, h1..h5, b, i, u, ol, ul, meta

Fields:
- width=50/0.5 (pixels/ratio)
- pad=50/0.5
- x, y = 50/0.5
- height = n (pixels)
- topb=1 (pixels)
- bottomb, leftb, rightb, midb = 1
- color=FF00FF (rgb)
- fcolor=00FF00 (text)
- bcolor=000000 (borders)
- colspan, rowspan = n
- just="L/C/R"
- b, i, u (bold, italics, underline)
- same (same as previous)
- vis (visible)
- coldefs
- rows, cols = n (grid size)
- id="mynode", id="mytag"

Subjects

- Basics
  - Math
    - Arithmetic
    - Percentages
    - Fractions
    - Linear Equations
    - Probability
  - Literacy
    - ESL
    - Phonics
    - Grammar
    - Writing
  - Computers
    - Windows
    - MS Office
      - Word
      - Excel
      - PowerPoint
    - Internet
      - Search Engine
      - Email
      - Job Search
- Math
  - Trigonometry
  - Algebra
  - Calculus
  (etc.)
- English
  - Composition
  - Literature
  - Research Papers
- Computers
  - MS Office
    - Access
    - Publisher
  - Graphics
    - Windows Paint
    - Photoshop
    - Adobe Illustrator
  - Internet
    - Web Design
    - Blogs
    - Facebook/Twitter
  - Computer Science
    - Languages
    - Data Structures
    - Compilers
    - Operating Systems
    - Tech Support
  - Gaming
    - Genres
    - Game Design
  - Mac
  - Linux
  - iOS
  - Android
- Science
- Humanities
- Engineering
- Art
- Sports
- Trades
- Business
- Politics
- Health
- Education
- Society
- Daily Life (for women)
  - Men's Issues
- Religion

Implementation Steps

1. User Authentication
2. Classes of Users
3. Subject Tree
4. Skills Table
5. Lesson Table
6. Scheduling
7. Tutor Search
8. Tutor-Student Messaging
9. Tutor Evaluation/Timekeeping
10. Misc. Tables:
    1. Cities
    2. Prerequisites
    3. Grade Scores
    4. Table Edits
11. Tutor Royalties
12. Partner Remuneration
13. User Hierarchy
14. LyvaTags Reader App
15. LyvaTags Encryption
16. LyvaTags Writer App
17. Convert Reader to iOS

About Me

I am Mike Hahn, the founder of LyvaTeach.org. On August 9, 2014 I began working on Basyx.org (a tutoring website). I started developing Lyvathon.org (a new programming language) on January 4, 2015, after dabbling in its precursors (sporadically) since the mid 90s. On January 24, 2015 I resumed working on Basyx.org, and resumed working on Lyvathon on May 9, 2015. I started designing Lyspio.com (the master website of all Lyvathon apps) on November 16, 2015. I started PlicTalk.com, an image collection manager, on January 13, 2016. One month later I reverted to Lyspio.com on February 15, 2016. I started Twirthie.com (a small project to help me learn Java) on March 24, 2016, which was based on an earlier idea I fleshed out in 1987. I started LyvaTeach.org on April 22, 2016 (used to be Basyx).

I was previously employed at Brooklyn Computer Systems as a Delphi Programmer and a Technical Writer (I worked there between 1996 and 2013). Just prior to starting Lyvathon I quit my job as a volunteer tutor at Fred Victor on Tuesday afternoons, where for 5 years I taught math, computers, and literacy. I'm now a volunteer computer tutor at West Neighbourhood House. My hobbies are reading the news at cbc.ca and going for walks in my neighbourhood. About twice a year I get together with my sister who lives in Victoria. She comes here or I go out there usually in the summer. At those times I'm much more active, but most of the year I tend to lie on the couch a lot, and not be very active. I do, however, visit my brother once a month or so and belong to Out of Your Shell, a social-recreation group for shy people.

Contact Info

Mike Hahn
Founder, LyvaTeach.org
515-2495 Dundas St. West
Toronto, ON M6P 1X4

Country: Canada
Phone: 416-533-4417
Email: hahnbytes (AT) gmail (DOT) com
Blog: lyvathon.blogspot.ca

Lyvathon

LyvaTeach lets you create your own web-based apps/games using both the Lyvathon scripting language and LyvaTags (an HTML work-alike). These apps are hosted by LyvaTeach. Both Lyvathon and LyvaTags are open source and Java-based. Alternatively, Jython is used to develop web-based apps written in Python. Many (but not all) of these web-based apps are meant to educate the end-user.

Client-Side

- Convert Lyvathon code to JavaScript at compile-time
- For free-form displays, convert LyvaTags code to HTML

Server-Side

- Convert Lyvathon code to LVC (compiled) format at compile-time
- LVC code is interpreted at run-time (similar to byte code)

Game Move Types

1. Single-User
2. Dual-User
3. Turn-based
4. Real-time (slow)
   - 20 seconds: local interactions
   - 10 seconds: upload/download player moves/game-state
   - Repeat
5. Real-time (fast)
   - 15 seconds: local interactions
   - 5 seconds: upload/download player moves/game-state
   - Repeat

Game Screen Size

- Fixed: same for all players
- Free-Form: web page based on LyvaTags code
- Double-Size:
  - Twice the size of fixed
  - Lines/arcs 2 pixels thick
  - Images stretched to twice normal size
  - Text size (in points) is doubled
- Same game can support fixed and double-size players simultaneously

Graphics

1. Line (horizontal)
2. Line (vertical)
3. Line (diagonal, 45 degrees)
4. Rectangle
5. Rectangle (filled)
6. Triangle (right isosceles)
7. Triangle (filled)
8. Circle
9. Circle (filled)
10. Ring
11. Arc (45-degree increments)
12. Pie (45-degree increments)
13. Ring (45-degree increments)
14. Image
15. Image (transparent)
16. Text

User Input

- Click:
    - isright = Y/N
        - touch-screen: click on (toggle) half-filled circle icon
    - isdbl = Y/N
    - objidx
    - (x, y): relative
    - z value:
        - Text: charidx
        - Graphic: inner/outer = 0/1
        - Line: exact = 0, off by one pixel = 1
- String:
    - Printable chars.
    - ASCII (0, 1):
        - Enter, Backspace
- Command:
    - ASCII (2 - 5): Up, Down, Left, Right
    - ASCII (13 - 24): F1 - F12
    - ASCII (65 - 90): A - Z, with Ctrl/Alt
    - LShift, RShift, Ctrl, Alt

Lyvathon Projects

1. Web app: ImageTree
   - Learn server-side Java programming
2. Lyvathon console-mode
   - Release code on SourceForge
3. Web-based terminal window
4. Lyvathon desktop-mode
5. LyvaTags parser
6. LyvaTags-to-HTML converter
7. Lyvathon-to-JavaScript converter
8. Lyvathon on server
   - Lyvathon libraries: add lots of code modules
9. Lyvathon app: ImageTree
10. Jython alternative (Python for the JVM) enables LyvaTeach apps to be written in Python instead of Lyvathon
11. Closed Source Projects:
    1. LyvAIDE: LyvAthon Integrated Development Environment
       1. Core functionality
       2. Syntax highlighting
       3. Code-completion
       4. Unlimited undo/redo
    2. Port LyvAIDE to Windows
    3. Add indexed search to Lyvathon library
    4. LyvaTeach.org website
       1. Perform beta testing
       2. Launch
       3. Accept credit card payments (paid tutor royalties)

ImageTree App

- Handle directory tree of image files
- Folder mode:
  - Display list of ancestor folder names
  - Display sub-list of sub-directories
  - If current folder contains image files:
    - Display link to those images as: [$]
- Super-grid mode:
  - Display grid of first image in each sub-directory
  - Current folder name ends with underscore
- Grid mode: display grid of images
- Image mode: display single image
- Commands:
  - Up: go to parent
  - Down: go down a level
  - Left: go to previous sibling/screenful of images
  - Right: go to next sibling/screenful of images
  - Click:
    - go down a level (or select ancestor folder)
    - magnify on/off
  - Crop: use in image mode

LyvaTeach Tables

Users

- UsrId
- FirstName
- LastName
- Email
- Phone
- Cell
- Password
- StartDate
- ^EndDate
- ^IsActive: Y/N
- Addr1, Addr2
- CtyId

Tutors

- TutId
- UsrId
- MentorId
- Intersection
- Rate: $ amt.
- PayPal info
- StartDate
- ^EndDate
- IsPartner: Y/N

ContentCreators

- CreId
- UsrId
- Rate: $ amt.
- PayPal info
- StartDate
- ^EndDate
- ^IsEmp: Y/N
- ^IsAdmin: Y/N

Skills

- SklId
- UsrId
- SubId
- StartDate
- EndDate
- Rating: percent
- Exper: hours

TutEval

- TevId
- TutId
- UsrId
- MtgId
- AttrNo
- Value: btwn 1 and 5

Sessions

- SsnId
- TutId
- UsrId
- DayOfWeek
- Time
- Length: Default = 60 mins.

Meetings

- MtgId
- SsnId
- Date
- Time
- Length

Items

- ItmId
- MtgId
- LsnId
- Length

Subjects

- SubId: body = <SubId>.SUB
- ParId
- NextId
- ChildId: zero for courses (leaf subjects)
- RefCount:
-    -ve: child = main record; +ve: main record
- Name: folder name/course no.
- Title
- IsDept: Y/N

Lessons

- LsnId: body = <LsnId>.LSN
- SubId
- CreId
- ParId
- NextId
- ChildId
- LsnNo
- Title
- Length: +ve: test length (minutes)
- AnsKey: Y/N
- Date
- ModifId
- ModifDate

City

- CtyId
- ParId
- City
- State
- Country

Prereqs

- PreId
- SubId
- PreSubId: zero for OR group
- ParId: PreId of OR group

Marks

- MrkId
- UsrId
- SubId
- LsnId
- Grade: percent
- Passed: Y/N

Edits

- EdtId
- UsrId
- EmpId
- EditDate
- EditTime
- Date
- Flag
- EditType:
- Dates/Flags preceded by caret (^)

Project Tables

UsrTab: (User)

- usrid (4)
- orgid (4)
- username (32)
- email (255)
- password
- altmail (255)
- phone (25)
- cell (25)
- answer (80)
- altans (80)
- question (80)
- queid (4)
- altqueid (4)
- isdev: (has website)
- iscnv: (has converted $$)
- balance ($)
- expirydate
- startdate
- active

OrgTab: (Organization)

- orgid (4)
- orgname (255)
- orglegname (255)
- web (255)
- phone (25)
- fax (25)
- addr1 (100)
- addr2 (100)
- city (80)
- state (80)
- cnyid (4)
- postalcode (20)
- balance ($)
- startdate
- active

EmpTab: (Employee)

- empid (4)
- usrid (4)
- orgid (4)
- title (80)
- iscontact
- startdate
- active

PrjTab: (Project)

- prjid (4)
- orgid (4)
- projname (255)
- title (255)
- descr (1024)
- width
- height
- movtyp
- ispassive
- startdate
- active

UprTab: (User Project)

- uprid (4)
- usrid (4)
- prjid (4)
- islead
- isadmin
- usrtyp (2)
- startdate
- active

QprTab: (Qty Project)

- qprid (4)
- prjid (4)
- date
- nodecount (8)
- bytecount (8)
- rank (4)
- ispay
- amt ($)

UliTab: (User Login)

- prjid (4)
- usrid (4)
- date
- logincount (4)

CnyTab: (Country)

- cnyid (4)
- cnycode (2)
- country (50)

QueTab: (Security Question)

- queid (4)
- question (80)

Lyvathon Tables

IntTab: (Integer)

- intid (8)
- intval (8)

FltTab: (Float)

- fltid (8)
- fltval (8)

StrTab: (String) {6 tables}

- strid (8)
- strval (2^N): [3..8]

VarTab: (Var. String)

- varid (8)
- len (2)
- datval (< 32K)

RecTab: (Record) {2-level hierarchy}

- recid (8)
- swval (2)
- isleaf
- fldids (128):
  - 16 x (datid = 8)
  - 16 x (recid = 8)
  - 16 x (fnmid = 8)
  - 16 x (fdeid = 8)
  - 256 nybs (fldtyps)

IdxTab: (Index)

- idxid (8)
- tabid (8)
- treid (8)
- name (255)
- idfcount (1): [1..16]
- hifldnos (8):
  - 16 x (hi nyb)
- lofldnos (8):
  - 16 x (lo nyb)
- descord (2)
- caseins (2)
- isdupok
- isprimkey
- isautoinc
- maxval (8) {autoinc}

DbtTab: (Database Table)

- tabid (8)
- prjid (8)
- name (255)
- desc (255)
- fldcount (1)
  - max 256 flds (hi/lo nybs)
- rftid (8): RecTab fldtyps
- rfnid (8): RecTab fnmid
- rfdid (8): RecTab fdeid
- reccount (8)

FnmTab: (Field Name)

- fnmid (8)
- fldname (32)

FdeTab: (Field Description)

- fdeid (8)
- flddesc (255)

DbrTab: (Database Record)

- dbrid (8)
- tabid (8)
- recid (8)

TreTab: (Tree)

- treid (8)
- parid (8)
- subid (64)
  - 8 x (id = 8)
- chibyt (1)
  - 8 x (subno >> rec = Y/N)