

Masaryk University

Faculty of Informatics



Project of public e-learning portal

Diploma thesis

Bc. Jan Bleha

Brno, 2013

Keywords

E-learning, business plan, business model, machine learning, cloud services, marketing, startup

Abstract

This thesis analyzes the phenomenon of e-learning education. The goal of this work is first of all to describe the current state of cloud based e-learning services enabling teachers to create, publish and sell their educational courses online. Consequently, a project for a new educational portal is designed with a comparison to those e-learning portals previously described.

Acknowledgement

I would like to express my gratitude to my advisor, Ing. Leonard Wallezký, Ph.D., for his support, consultations, comments and supervision during my work on the thesis. Furthermore I thank Ing. Petr Ludwig for providing educational testing material, Mgr. Michal Hrabí for entrepreneurial mentoring, Lukáš Schejbal for technological initiating, MA Nelleke Kruijmer for language corrections, and last but certainly not at least I would like to thank my family and friends for their support, encouragement, understanding and motivation.

Contents

Keywords.....	i
Abstract	iii
Acknowledgement.....	iii
Contents.....	iv
1 Introduction	1
I THEORY	
2 E-learning.....	4
2.1 History of e-learning	4
2.2 The network generation.....	5
2.3 M-learning	5
2.4 Cloud based e-learning.....	5
3 Current trends in e-learning.....	6
3.1 Massive Online Open Courses (MOOC).....	6
3.2 Khan academy	7
3.3 DuoLingo	7
II CURRENT E-LEARNING SERVICES	
4 Introduction	9
5 Demonstration courses	10
5.1 Video course of personal efficiency.....	10
5.2 Set of exercises to learn a new alphabet	10
6 Platforms for conventional video-based courses	11
6.1 Udemy	11
6.2 Ruzuku	13
6.3 Skillshare	14
6.4 Pathwright.....	16
6.5 Litmos.....	18
6.6 MindBites	19
7 Platforms for a quiz-based education.....	21

7.1	Quipper.....	21
7.2	ProProfs.....	23
7.3	BrainScape.....	25
7.4	Examprofessor	26
8	Comparison of publishing portals.....	28
A NEW E-LEARNING PORTAL		
9	Introduction	31
10	Design of a new e-learning portal.....	32
10.1	Users.....	32
10.2	Question generation algorithm.....	35
10.3	Technology	35
11	Business plan	37
11.1	Executive Summary	37
11.2	Concept.....	38
11.3	Product	39
11.4	Expansion Plan.....	40
11.5	Vision.....	40
11.6	Business model.....	41
11.7	Business Model Canvas.....	42
11.8	Target Market Segmentation.....	44
11.9	Competitive Advantages.....	44
11.10	Marketing Plan	45
11.11	Exit Strategy.....	47
12	Comparison with existing platforms.....	48
13	Conclusion.....	49
	Bibliography	vi

1 Introduction

“Invest in your education with a great amount of silver, and with it you will acquire much gold.”

Sirach 51:28, Common English Bible (CEB)

Education has always been considered as a profitable investment. An importance of its acquiring is one of the little priorities common to all; individuals, families and bigger groups of people such as states [1].

The role of human learning is in gaining conditions for active balancing with natural and social life [2]. While nowadays the role of learning remains the same, the conditions for full, active and creative life changes dramatically [3].

The world around us changes faster every day and is interconnected as never before. If we want to prosper in this environment, we need to persistently gain and develop new skills and knowledge. Never before has an effective attitude of lifelong learning been as necessary for so many people - from economic point of view, as well as simply for understanding and finding a common sense in a currently very complex world [4]. Formal education does not automatically provide a well-paid job, as it used to be in the past [5] and it hardly can keep up with the speed and complexity of the present days. Therefore there is every likelihood that the demand for a non-university education will henceforth grow.

At the same time the technologies are in these days significantly cheaper, easily available and acquirable by a wide audience than just a decade ago. Connecting these technologies with the educational process in the current world brings us unexpected possibilities. It already provides possibilities to obtain a good education in a variety of forms from geographically distant places in time and space. Additionally, education can be substantially adjusted to needs of every student. A great example is the current phenomenon of Massive open online courses. The best universities of the world provide their courses online, and available for free of charge and for anyone to apply.

Not only a wide variety of students is now able to make use of the current educational technologies, but also teachers from all around the world - including teachers from non-academic environment - can use the state of the art informational tools. Today everyone with a decent computer, fast internet connection and an expertise in a certain field can pass their knowledge to the broad internet audience. With a major price reduction, simplification and security of payments internet represents also an interesting distributional channel for business involved in public education.

The objective of this work is twofold. First of all the thesis aims at description and comparison of cloud based possibilities for individuals (without skills in programming) to publish and sell their educational content online. Consequently a new concept of a portal is introduced both in technological and business means.

The thesis is divided into three main parts:

In the first part the e-learning phenomenon and all its related terms are clarified. It is followed by an overview of the current trends in e-learning, and the most frequently used free services.

The second part describes new online platforms for creating, publishing and selling educational content. These platforms are divided into video-based and quiz-based tools. Two examples of courses are introduced and their publishing is tested on defined platforms. At the end of this part the platforms are compared.

In the third part of this work a new concept for an educational portal is presented. At first the characterization of users and their actions is defined followed by the design of a visual guide representing the skeletal framework of the portal. Subsequently the algorithm for generation of quizzes is introduced and a general proposal for use of external development services is made. The major focus of the third part is concentrated on creating a business plan. At the end the new concept is compared to the portals described in the second part.

PART I

THEORY

2 E-learning

“We need to bring learning to people instead of people to learning”

Elliott Masie, Masie Center

2.1 History of e-learning

Although the term “e-learning” was used for the first time in a professional environment in 1999 [6], distant learning was defined already in 1995 by Desmond Keegan as *“education and training resulting from the technological separation of teacher and learner, which frees the learner from the necessity of traveling to a fixed place, at a fixed time”*.

In terms of online education particular phases as fundamental milestones of the internet development can be defined [7]:

Web 1.0

The term Web 1.0 typically describes an early stage, characterized mainly by the static publishing of information in hypertext form. Although the amount of available knowledge was rapidly growing, the one-way transfer of information was prevailing. The opportunity to publish data on the internet was not for everyone. On that account ordinary users could not participate in creating or evaluating educational content online [3]. Online education was merely focused on retrieving education.

Web 2.0

The philosophy of the (currently dominant) second phase of development of the web is communication, socialization and sharing between users of the internet. The online tools are usually free and simple to use, because they do not require any specific technical skills. A user is hereby not just a consumer of the content of the web but he can actively participate in its creation. Therefore, online education can establish a broad spectrum of communication between teacher and student, or even between students themselves.

Web 3.0

Although the definitions of Web 3.0 vary greatly, in the context of this thesis the meaning that relates this term to the personalization of the web will be used. According to this definition, a new phase of internet development is focused on the individual [8]. It takes into the account the user's behavior, and comes with a different approach to each of them depending on their previous behavior. Online education in this concept will be considered as focused on the individual needs and efforts of each student.

2.2 The network generation

“Current students changed much more than just in the way of speaking and dressing as it used to be generations before”

Marc Prensky

An important aspect of all technology is its setting into the context of the society for which it is meant. The network generation (also described as *Digital natives*) refers to people who were born during or after the introduction of digital technologies, and who from an early age use those technologies. By way of contrast stands the so-called “digital immigrants”, who usually are older people, who encountered the digital technologies in their adulthood.

The network generation is characterized by the following characteristics [9]:

- they do not struggle with multitasking
- they prefer visual and audio materials over textual materials
- they can easily connect the virtual world with the real one
- they favor interactive activities over passive listening
- they prefer learning over doing and exploring
- they struggle to keep concentration for a longer period of time
- they lack self-reflection
- they have difficulties to evaluate the quality of available information

2.3 M-learning

According to the Maxmilliandictionary.com, m-learning stands for *“learning methods and materials that involve the use of mobile phones or handheld computers”*. With the rapid growth of smart phones (over 1.4 billion active devices worldwide by December 2013 [10]) and predictions favoring the active use of the devices over desktop computers (overtaking fixed internet access by 2014 [11]), there is a huge potential for a shift from the traditional *“sitting in front of the computer”* e-learning to education on the way and learning from small mobile devices.

2.4 Cloud based e-learning

According to Techtargget.com, cloud services are simply defined as *“any resource that is provided over the Internet”*. In the context of this thesis, the cloud services are differentiated from the traditional tools by the lack of need to install or manage software on the hard disk in order to create, publish and sell online education. In the following paragraphs the focus will be only on these internet-based solutions, available through a web browser.

3 Current trends in e-learning

This thesis concentrates on the perspective of independent teachers and their cloud based options to publish and sell education online. Nonetheless, for the purpose of orientation in the market of education, it is necessary to mention a few other currently very popular online educational services as well.

3.1 Massive Online Open Courses (MOOC)

According to the Oxford dictionary, MOOC is defined as *“a course of study made available over the Internet without charge to a very large number of people”*. These courses are usually designed by well-known university professors, and the development of a MOOC is generally very expensive with costs over \$100 thousand [12]. Open access of these courses usually attracts high numbers of students. For example more than 160 thousand students signed up for a course in artificial intelligence at Stanford University at the end of 2011 [13].

Both the general public and the elite in education perceive this way of learning as a revolutionary tool for opening up access to education in ways that were not possible before [14]. The New York Times even tagged 2012 as *“The Year of the MOOC”* [15].

Very low completion rates (reported to be around 7% [16]), however, can be considered as a drawback of this phenomenon. Additionally, questions about its business model of long-term sustainability have been raised [17].

Numerous MOOC providers worldwide are being led by these three largest platforms: Coursera, EdX, and Udacity.

Coursera

Coursera is a for-profit company founded in 2012 with over 5.2 million users providing courses from 102 universities. The company raised \$65 million in venture capital. The business model has not been established yet, although a list of ideas to generate value was published [18]. In September 2013, Coursera announced to have earned \$1 million through verified certificates [19]. The fee for certificates was paid before the course had started and it significantly increased the completion rate [20].

EdX

EdX is non-profit company founded in 2012 by MIT and Harvard University. Each university contributed \$30 million of the resources to the nonprofit project [21]. In addition to

these universities, 27 other educational institutions also offer their courses on the EdX website [22]. The design of a viable business model is in progress, but will most likely depend on fixed costs for courses provided from universities plus revenue share of the courses (certificates) sold [17].

Udacity

Udacity is a for-profit organization focused on free computer science classes, which was founded in 2012 and now has about 700 thousand users [23]. The company received \$15 million in investment [24]. Its business model consists of matching students and employers and also by having companies to sponsor courses [25].

3.2 Khan academy

Khan Academy is a non-profit educational website that started in 2006 as a simple collection of individual personal use of videos, teaching the founder's niece hosted over YouTube. Currently, the website is reaching about 10 million students per month [26]. The organization focuses on delivering video tutorials, but lately it has also been publishing a personalized learning dashboard providing interactive materials. All videos are hosted in YouTube, but for now the company provides the whole educational experience without any advertisement [27]. The business model is based on a system of donations, mainly attracting big software companies [28]. At the end of 2013 the company also sent an email pledging the users for financial support.

3.3 Duolingo

Duolingo is a free language-learning platform founded in 2006 with currently over 10 million users. It enables users to learn the six most popular European languages by doing simple translation exercises. The company focuses on a gamified¹ learning experience. The organization was funded by over \$18 million [29]. The business model is based on crowd sourced translations [30]. Duolingo released apps for Android and iOS, which quickly became the most popular educational app in both with ratings 5/5 stars in The Mac App Store and downloads by more than 5 million users in Google Play store.

¹*"Gamification is the concept of applying game-design thinking to non-game applications to make them more fun and engaging."* (gamification.net)

PART II

CURRENT E-LEARNING SERVICES

4 Introduction

In this part of the thesis the description of the major options for an individual to create, publish and sell an educational course online are presented. Subsequently two example courses are exposed. These courses are distinguished by required activity of a student. Classification tries to respect the concept of *deep* and *surface learning*. The transformation of old knowledge into new is supposed be higher in active problem solving - *deep learning* [31]. The publishing of these courses is tested on described platforms.

In following text the main focus is on the newly arisen and simply to use portals with their own custom environments. The decision of skipping the traditional LMS² like Moodle or Blackboard (as already mentioned in chapter 2.4.) is generally because viable, interactive online education requires software that can meet a new generation of demands: Social, mobile, rich multimedia, flexibility, and scale. This leads to a conclusion why most of the new educational platforms built their own custom software [32].

²*“LMS - Learning Management system is a software package that enables the management and delivery of learning content and resources to students“* (trainingforce.com)

5 Demonstration courses

In this chapter two examples of educational courses are presented. In the following chapters publishing and selling of these examples is tested.

5.1 Video course of personal efficiency

This example consists of two lessons. Each lesson contains a video, a presentation and a simple test which needs to be accomplished in order to move to the second lesson or to finish the course. The first lesson is free, the second costs \$10.

The order of the course

1. First lesson contains video file “*How to fight procrastination - Petr Ludwig.mp4*” (110 MB) and presentation online from slideshare.net
2. A multiple choice test of 4 questions; each of which has 4 possible answers, one is correct. In order to pass the test, three out of four must be answered correctly.
3. In order to move to the lesson 2 a student has to pay \$10.
4. Second lesson contains video file “*Vision - Petr Ludwig.avi*” (220 MB) and presentation “*Petr Ludwig Vision.pdf*” (5.4MB)
5. The same structure of the test as previously described in point 2.

5.2 Set of exercises to learn a new alphabet

In these example two alphabets in Unicode - a Russian Cyrillic alphabet and the phonetic English transcription are presented. The demand is to make a set of simple exercises to practice reading the Russian alphabet. This example does not specify the order of the course. The essential focus is on simplicity and on the mobile device friendliness. Concerning payments both options are tested - publishing the course for free and selling it for \$10. Final objective is to test personalize generation of question based on the previous effort of the individual student, and also an option of a crowd-determined level of difficulty.

Russian alphabet	А	Б	В	Г	Д	Е	Ё	Ж	З	И	Й	К	Л	М	Н
English transcript	A	B	V	G	D	YE	YO	Zh	Z	EE	i	K	L	M	N
Russian alphabet	П	Р	Т	У	Ф	Х	Ц	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
English transcript	P	R	T	U	F	H	TS	SH	SH						

Tab 4.1: Example of two sets of questions

6 Platforms for conventional video-based courses

In this chapter six portals for publishing and selling educational materials are described. What these portals have in common, is their support of video materials and (with the exception of the last one) their focus on large-scale elaborate educational courses.

6.1 Udemy

"We saw a need. We've noticed there are thousands of people out there trying to teach over the internet, but they lack the technological capabilities to do it effectively."

Gagan Biyani, the co-founder of Udemy

About

This originally Turkish software for a live virtual classroom evolved in what is currently the biggest portal for publishing and selling courses on the internet [33]. In its online marketplace it offers over 8 thousand courses [34] and the company announced to have registered the millionth student in August of 2013 [35].

The company

At the beginning of 2010 funding the idea behind Udemy was not successful, but after a launch of the product and an immediate attention of the audience (2 thousand courses published and more than 10 thousand users registered in just two months after its start) the company raised \$1 million in Seed funding to expand [36]. This was followed by an investment of \$3 million in Series A funding at the end of 2011 and \$12 million in Series B funding in July of 2012. The company currently employs about 98 people [37].

The business model

The Udemy is a free tool to create and share courses. The service takes share of revenue only if the course is being sold. Share of the revenue varied during the time. At the launch of the portal it started with 20% of sales [38] but increased to 30% [39]. Currently it depends on where the customer found the course. In case the course creator brought the customer buying the course, the course creator keeps 100% of the sale, in case the customer came from Udemy marketplace teacher keeps 50%. In case an Udemy affiliate program is the source of the revenue, the share for the teacher is 25%, the affiliate partner obtains 50% and Udemy keeps the rest.

Publishing a course

Udemy provides mostly video materials. The portal asks that at least 60% of the lectures be video based. A typical Udemy course contains 1-3 hours of content [40]. The portal already supports 10 languages and this number is expected to be growing [41].

Layout

Every course is divided into sections. Each section then consists of Lessons and Quizzes. Each lesson contains one form of study material - video, audio, presentation, document, text or a mash-up (a combination of video and presentation with possible time synchronization).

Video

Videos of various formats up to 1GiB can be uploaded. The portal also enables importing video from video hosting services such as YouTube and Vimeo.

Documents

Presentations up to 1GiB can be uploaded, and only the .pdf format is supported. Udemy also provides the possibility to import presentations from the slide hosting service SlideShare.

Tests

Udemy support only simple exercises as an addition to the (preferably video) content lessons.

Selling the course

Udemy claims that its top-10 earning instructors earned more than \$1.6 Million in course sales. The support of foreign languages provides a significant help for the non-English teachers. Several courses in Spanish earned more than \$10 thousand each in first two months (businesswire.com). The company openly focuses on the top instructors with its public description “*Amazing Instructors. Teaching the World*” [42].

In order to make profit on Udemy a teacher has to apply for a premium account. This procedure is free of charge, but the teacher is obliged to provide additional personal information, PayPal account information and agree to the Udemy Paid Course Terms & Conditions [43]. PayPal is currently also the only option to receive revenue.

Smart phones availability

An app for iOS was created at the end of 2012 and at the beginning of 2014 has been already been updated for 6 times. The first version of an app for Android devices was announced to be published in mid-2013 [44]. Nonetheless, at the beginning of 2014 no app was yet released.

Publishing video course example

Publishing video lessons is what Udemy was created for. Therefore it was easy to create such a course. The portal enabled to upload both video lessons and presentations and synchronize them. It also enabled having correctly done the first questionnaire as a prerequisite for opening the content of the second lesson.

6.2 Ruzuku

“Ridiculously easy online course creation”

Ruzuku’s tagline

About

Ruzuku is a new service providing an environment for creation of educational courses. Ruzuku focuses on the simplicity of course creation.

The company

The company founded in 2012 was incubated in the Triangle Startup Factory with an initial seed funding of \$50 thousand [45]. Courses sold over Ruzuku have already had a turnover of more than \$1 million [46].

Business model

Ruzuku charges the courses creators monthly, but does not keep any part of the profit they make selling those courses. The monthly fee is \$79 or \$129 depending on the features provided. The 30% discount is allowed for those who pay annually. The company currently employs 4 people [47].

Publishing a course

As already mentioned above, Ruzuku concentrates on the simplicity of course creation.

Layout

The service provides a clean, predefined structure for every course. Every course is divided into modules, every module into activities. A course creator can edit an activity in a simple WYSIWIG³ editor, add images, (one) video, audio, upload files and add/include discussion prompt.

Video

Portal allows only videos in mp4 format to be uploaded.

³ WYSIWYG is an acronym for “what you see is what you get”, usually used for editing a web content.

Documents

Ruzuku allows uploading a variety of documents which are shown inline. However it does not provide a possibility to synchronize them with video.

Tests

The service does not provide quizzes in advance forms. Platform encourages using tests from different providers.

Selling a course

Ruzuku provides a shopping cart for courses. Payments go from students straight to the PayPal account of the course creator; however only the Business or Premium types of PayPal users are supported.

Smartphone availability

Neither app nor a mobile version of the portal is provided.

Publishing video course example

Ruzuku does not allow dividing a course into a free and a paid part. Also, it does not include any advance tool for creating quizzes. The approach that Abe Crystal, co-founder of Ruzuku recommends is following:

1. Create a free course containing the first lecture (video and a presentation as a downloadable attachment)
2. Create a paid course containing the second lecture in the same format
3. Embed questionnaire from a free form tool such as Google Forms
4. Once participants complete the questionnaire, you can send them the link to the paid course on Ruzuku (which will have its own unique URL).

Concerning creating the course according to the definition in chapter 4.1 the Ruzuku also failed to upload video in .avi format.

6.3 Skillshare

“While it’s great to learn multi-variable calculus or the economics of China during school, but by the time a college starts teaching “Mastery in Online Community Management”, it will become so outdated and irrelevant. Traditional education will never catch up to the skills needed in the market today.”

Michael Karnjanaprakorn, the co-founder of Skillshare.com

About

The portal evolved from a community where people could sign up online for real personal classes [48] in a space for sharing and selling courses online in its own marketplace. The goal of the platform is to focus on relevancy of education provided. Skillshare claims to be Airbnb⁴ for education [49]. Skillshare refused to share how many students participated in its classes, but it is estimated to be around 30 thousand [50].

The company

Skillshare is a New York based company that started at the beginning of 2010. The company received \$550 thousand in Angel funding, followed by \$3.1 million in Series A funding in 2011 and \$1 million in Venture Round funding at the beginning of 2013 [51].

Business model

With two exceptions, Skillshare takes 30% of the revenue from courses sold. On courses sold through a unique referral link, Skillshare takes only a 15% fee. Nonetheless, for courses sold through Skillshare's paid affiliate marketing programs, the fee is 50%. Furthermore it still provides the selling tickets online for real person-to-person education, where it charges 15% of the price [52].

Publishing the course

Skillshare brings the MOOC concept into paid education. Unlike in other portals with educational content, it is mandatory to specify a starting date of the class created. The aim is to attract a crucial amount of students at the same time for their interaction during the course. Additionally, all courses must be in English. Also, Skillshare is very selective in what content teachers can provide. Authors claim only to accept courses in certain categories such as Design, Fashion, Film & Video, Food & Drink, Lifestyle [53]. Additionally a specific format of the course is required. Each course has to have a minimum of 45 minutes of video content, broken into 4-9 minute videos.

Layout

Every course is divided into units described in Project Guide. Every unit requires at least 1, but no more than 3 short video lessons.

Video

Video format is a core of all courses in Skillshare. All videos before publishing will be reviewed against 8 criteria - clarity, framing, length (3-8 minutes long), audio, lighting, file size (video file does not exceed 750MB), file format (video is formatted as .mp4, .avi or .flv) and use of presentation.

⁴AirBnB is a site for travelers that allow people to offer and search for housing.

Documents

The creation of presentation is recommended to be done through external online services. The supported tools for embedding presentations into your lecture are Google Docs, PowerPoint, Prezi and Keynote.

Tests

Skillshare does not support tests. Interactions students make are done through projects they share with each other and with the lecturer.

Selling a course

Payments are provided to a verified PayPal account on the 1st and 19th of every month. Additionally at least 14 days after the purchase of the course money can be delivered due to the refund policy [54].

Smart phones availability

Neither app nor a mobile version of the portal is provided.

Publishing video course example

Not possible due to predefined restriction of course structure, topic and language.

6.4 Pathwright

“While the tech world focuses on new technology as a panacea, it’s easy to forget the core”

Pathwright about

About

Pathwright targets as customers any person or organization who wants to offer online courses under their own brand. The platform does not provide any marketplace and lets customers to create even their independent online educational schools. Pathwright claims to currently have over 17 thousand student registrations in more than 100 courses and - unlike other platforms - active users from 122 countries [55].

The company

Pathwright is a new small educational startup company founded in March, 2012. It was a part of the Iron Yard accelerator, where it raised a no specified seed funding in November, 2012 [56]. Founders of Pathwright also used a non-conventional way of raising capital through the

crowdfunding⁵ platform Kickstarter.com. Their campaign aimed at bringing professional illustrators to the online teaching raised more than \$34,000 (with a goal only \$14,000) from 405 backers [57].

Business model

Pathwright charges for amount of students registered in courses. Pricing starts at \$7 per course registration (a single student to a single course) and fall into \$4 if it is paid for more than 500 registrations in advance. Additionally the revenue-charge of 4% of sales is introduced in case courses are being sold over Pathwright interface.

Publishing the course

Layout

Every course is divided into major Topics and each Topic then into Lessons. Within a lesson steps are created to be taken in order to complete each lesson. The environment is simple with a switch button to see the course either as a teacher, or as a student.

Video

Videos in lectures can be uploaded from a public url link from the video providing services such as Youtube.com and Vimeo.com. The upload of the files is not supported

Documents

Documents can be embedded in html code of services such as Slideshare.net. Uploading presentation files such as PowerPoint is not supported.

Tests

Tests could be a part of each lesson. There are two types of quizzes available. Either you can create a Practise - it can be taken by students as many times as they like with an automatic feedback right away, or it can be a Test where you receive a grade after you have submitted. Tests can be used to determine successfully passing the course.

Selling a course

Pathwright.com mainly supports Stripe⁶ as a merchant service for payments. This service is not fully supported for outside of the United States and Canada. In case your bank is in a different region, the PayPal can be set up on a request.

⁵“Crowdfunding is a way to raise money by asking many individuals to contribute funds, often in small amounts, to a specific business venture or cause.” (cnbc.com)

Smart phones availability

Neither app nor a mobile version of the portal is provided.

Publishing video course example

To publish the example is only possible by creating two separate courses. First the course that consists of the first lesson (video, presentation, and questionnaire) is created. In the first questionnaire, a minimum score can be set that a student must achieve before being able to complete the learning step. Once a student has met the minimum score, invitation to the second course that has a fee can be send.

6.5 Litmos

About

Litmos focus on creative and media-rich content for web-based trainings. According to its webpage the company has millions of users in 130 countries.

The company

Litmos was founded in 2006 as a small company for providing training management system [58]. The company was acquired at the middle of 2006 by global enterprise software company CallidusCloud Software Inc. for \$2.6 million in cash payment [59]. The company currently has 15 employees.

Business model

Litmos charges its users on a monthly basis. The fee varies mainly on the basis of the number of active users, but also on advanced functions and support. Subscription starts at \$49 per month for 5 active users and goes up to \$1499 per month for 2000 active users. Selling courses is not charged with any additional fees beyond the transaction fees.

Publishing the course

Platform is able to upload SCORM⁷ materials, but also enables creating courses online using either their theme editor, or custom HTML and CSS. Environment is available in 22 languages.

⁶ Stripe is easy service for accepting credit and debit card payments online. The service is currently available only in the USA.

⁷“SCORM (Sharable Content Object Reference Model) is a set of technical standards for e-learning software products” (scorm.com)

Layout

In Litmos creative environment every course is divided into modules. Each module is assigned to either material to upload - video, SCORM, presentation, Flash file (.swf) or audio (.mp3), material to create - Live session, Assessment, Survey or Page of information or material to connect with - content from another course or another website

Video

Videos of variety of formats with a maximum file size of 1 GB can be uploaded.

Documents

PowerPoint or Keynote presentation up to 10MB can be uploaded.

Tests

Litmos provides a built-in assessment tool to create tests and quizzes. Questions of different types can be added.

Selling a course

Litmos integrates e-commerce functionality and allows users to link a PayPal verified business account to a Litmos account. Litmos is also integrated with over 35 banks around the world via PaymentExpress.com [60].

Smart phones availability

Both iOS and Android apps are available.

Publishing video course example

It is possible only by providing two separate courses. The service does not allow making part of the course for free and the other part paid.

6.6 MindBites

About

MindBites is a portal for publishing and selling video instructional content.

The company

Founded in 2007, the company raised \$1M in Series A funding in 2008[61] and currently has 15 employees [62].

Business model

MindBites charges for both, transactional revenue, as well as monthly for additional features. Charging for revenue starts at 35% and goes down to 25%. In all cases of selling the content \$0.29

additional transaction fee is charged. A monthly plan varies from free to \$125 and is differentiated by video size limit, quality, upload and edit options and sales possibilities.

Publishing the course

Being entirely focused on video format, MindBites provides a very easy-to-use publishing environment. The company specifies that video content has to have an educational character and explicitly forbids entertainment videos.

Layout

MindBites provides a simple form to upload videos provided with name, description and category. Additionally a price and access period is set. This access period sets the number of days provided for a single user to watch the video after purchase.

Video

The major video formats are accepted.

Documents

The portal only allows video content. Document files are not supported.

Tests

The portal allows only video content. Tests are not supported.

Selling a course

After reaching minimum limit \$25, money can be transferred to the user by PayPal.

Smart phones availability

No app or the mobile version of the web is provided.

Publishing video course example

Not possible. The portal does not support quizzes.

7 Platforms for a quiz-based education

In the previous chapter the major educational portals for publishing and selling courses were compared. These portals provide a good platform for sharing video, textual and presentation content. Nonetheless, previously described services concentrate more on large-scale coherent courses, connecting the static materials (such as video and textual content), most of the time providing a not interactive experience of student online education.

In this chapter the focus will be on an entirely different concept. Educational services, where the main focus is on exercises and learning by practicing will be compared. At the end of each platform, the example of a course (described in chapter 5.2.) will be tested.

7.1 Quipper.com

About

Educational company Quipper provides a question app for iOS and Android platforms that allows users to do quizzes and tests and also enables them to create quiz programs on their own. The service already covers more than 2 thousand topics in 11 languages [63] and claims to have more than 1.7 million users who together have answered their questions about 85 million times.

The company

Quipper is a London based company founded by Masayuki Watanabe, co-founder of DeNA (currently one of the top mobile gaming companies). The company received \$623k in Seed funding at its very beginning [64] and then in the middle of the 2012 it raised \$3.6 million in Series A funding. Currently the company employs 12 people [65].

Business model

Quipper is not charging creators of quizzes at any stage. The business model is based on revenue share if creators decide to sell their apps. The free courses also include advertisement as an additional source of income for the Quipper Company. Besides providing a platform for publishing and selling, this educational portal, according to its website, sells its own educational products aimed at middle-school learning for US students and students of south-east Asia.

Publishing the course

Quipper is dedicated to creating simple quizzes. After creating a set of questions and answers the admins review the quiz and within seven days it can be published and sold within the company app for iOS or Android.

Layout

Every quiz is composed of questions. Every question contains the question itself, the answer and optional hint and explanation. Each part of the question can be in textual or image format.

Audio and video

Neither audio nor video can be used.

Documents

Quipper does not support any documents.

Tests

Making tests is only possible when writing every question and providing right and wrong answers to each of them. Tests do not support any solutions for delivering failing questions more often or set-up the difficulty based on the effort of the crowd.

Selling a course

Currently, the monetization feature functions only in limited ways and are focused on Southeast Asian Markets.

Smart phones availability

Quipper provides an app for iOS with courses incorporated within.

Publishing test course example

It is hardly possible to create such an exercise. Every question has to be provided with predefined answers and therefore connecting two sets of elements as questions and related set of answers is not possible.

7.2 ProProfs

“ProProfs is like the YouTube of quizzes.”

Sameer Bhatia, founder of ProProfs

About

The core business of ProProfs is an online platform which includes comprehensive e-learning tools such as course creator, poll maker, survey maker, quiz maker and flashcard maker for creating educational courses or employee training. The company claims to be a leader in online quizzes with over 100 thousand quizzes created and over 1 million users and over 300 thousand free quiz templates [66]. The company claims to have professors from core educational institutions, like Harvard, using the ProProfs platform to support their large-scale quizzes [67].

The company

The company was founded in 2005 by Sameer Bhatia. In 2012 it started to allow their users to sell their quizzes. Currently the company has about 50 employees [68].

Business model

ProProfs' Quiz-maker uses the freemium⁸ business model. Advanced services are provided for a monthly paid fee with 50% discount when paid annually. Subscriptions for additional services range from \$9.97 to \$39.97 per month for non-commercial and educational purposes and \$39.97 to \$299.97 for business purposes. The free edition is provided with advertisements, has some features disabled [69] and is not available for business use. Selling of quizzes is charged by 10% of the revenue if a teacher is already paying for any of the products and 20% otherwise.

Publishing a course

Quiz Maker provides a very easy, creative environment with drag and drop functions.

Layout

Every quiz is can be created from 9 types of elements - 6 types of questions (Multiple choice, Checkboxes, True / False, Matching and Fill in the blanks) and 3 types of passive documents (Text, Document and Video). After creating a quiz can be simply embedded on a blog or a web with html code.

⁸Freemium - *“a business model that allows a consumer to receive basic services for free, but requires them to pay for any service deemed to be premium.”* (businessdictionary.com)

Audio and video

Audio and videos can be also added as a part of the quiz. The following formats are accepted: .flv, .mp3 and .mp4. No upload from online video services is allowed.

Documents

As a part of every quiz, documents of following formats can be added: .doc, .docs, .pdf, .ppt and .pptx. No upload from online document services is allowed.

Tests

As mentioned above, 6 types of questions can be used. Points can be differently distributed among questions. This service also includes ability to upload questions Microsoft Excel file and premade questions (more than 3 million public quizzes questions [66]). Nonetheless, in all formats of questions only one question and set of related answers to the specific question is allowed. The service also generates the questions randomly and does not provide any adaptation according to the effort of a student. Crowd determined level of difficulties is also not supported.

Selling a course

ProProfs has developed its own payment gateway and provides payments for courses once a month via PayPal on the 5th of each month. In case a teacher is paying for additional services they can also set their own payment mechanism and use the service of ProProfs just for course/quiz delivery within their website and just pay the subscription fee [66].

Smart phones availability

According to the Frequently Asked Questions ProProfs “*use HTML5 technology, which ensures that the images, videos, PPTs, PDFs that you upload to your quizzes, run across all kinds of mobile devices such as an iPhone, iPad, Android and more.*”

Publishing test course example

It is hardly possible. Even though the platform enables uploading a spreadsheet file with questions and answers, every question still has to be provided with predefined answers and therefore connecting two sets of elements as questions and related set of answers and mixing them together to generate questions is not possible.

7.3 BrainScape

“...in this huge movement toward constructivist learning environments, we often forget that the goal of knowing things is still just as important as having skills”

Andrew Cohen, founder of BrainScape

About

BrainScape brings a mobile education platform for flashcards. The company claims to use a cognitive science in order to improve the speed of learning.

The company

Founded in 2010, the company was shortly afterwards accepted to the AlleyNYC incubator and raised \$1.2 million in seed funding. Currently BrainScape continues to raise funds for further development [70]

Business model

BrainScape charges students in premium content marketplace for flashcard-based courses having complex curricula. The company also states the possibility to sell the courses. But no additional information, or functions in their web-based publishing tool were found.

Publishing a course

Portal has a simple environment for creating courses.

Layout

Every Subject contains Decks and every deck then contains a set of flashcards. A set of flashcards is provided by two rows with related answers and questions. Only textual form is allowed.

Audio and video

BrainScape is interconnected with text-to-speech tools enabling reading the text out loud on flash cards. No option for uploading videos is presented.

Documents

Platform is aimed at the flashcards. There are no options to upload documents.

Tests

BrainScape does not provide a tool to create tests. Nevertheless, it does provide a platform for creating flashcards with self-assessment. The main feature of the platform is working with generating question according to the previous effort of the individual student. Nonetheless the crowd determined level of difficulty approach is not supported.

Selling a course

The service claims to make it easy to sell multimedia flashcards. Nonetheless for doing so a teacher has to contact the company and come to an agreement concerning the appearance of the quiz and revenue share.

Smart phones availability

The company is focused on iOS users as it has more than 5 million cumulative iOS app installs. An app for Android has not yet being released, as the authors of BrainScape issued that an Android app development was not a priority [71].

Publishing test course example

Uploading a set of questions and related answers from .csv file is supported. The course can be published inside their application for iOS. Nonetheless selling the course requires broad communication with the authors and is mainly supported for already established teachers.

7.4 ExamProfessor

“Many new clients that come from other systems are delighted that Exam Professor just works, when it’s supposed to, every single time. Apparently in our business, that is difficult to find.”

David Brennan, the founder of ExamProfessor.com

About

Exam Professor is a simple service for posting and selling online exams. It is currently used mostly by small businesses training, certifying and hiring new employees (doeswhat.com).

The company

Launched in the middle of 2006 as a project of an educator in a public school, ExamProfessor is a privately held company that has received no outside funding, but is reinvesting all its profits into research and development [72].

Business model

ExamProfessor’s business model consists of both, monthly subscription for additional services and limit number of users, and a revenue share of sales. It starts with a free plan, which allows for creating only one exam for up to 10 students with 30% charge of the revenue, and it then goes up to \$99 per month for unlimited amount of exams and students, charging 15% of sales. Monthly subscription is discounted 10% when paid annually and 30% when paid for three years in advance.

Publishing a course

Easy to follow flash based environment enables simple creation of exams.

Layout

A teacher creates a set of questions, assigning them to exams. Those exams can be assigned to classes that consist from students.

Audio and Video

No audio or the video can be uploaded

Documents

No presentation or the document can be uploaded; only pictures can be uploaded up to 300kb (JPG, PNG, GIF).

Tests

Every question can be provided with optional description and a picture. To each question possible answers are assigned. Only one correct has to be marked.

Selling a course

Sales are interconnected with PayPal account. A teacher has the option of collecting payment instantly through a collection button, or having sent the payment each evening to their PayPal account. Only Public exams can be sold and their price cannot be lower than \$3.

Smart phones availability

The founder of the Exam Professor stated that “Our teacher and student interfaces are built using Apache Flex, which has the capability to work on mobile devices. We are now focused on building a new student interface in HTML 5 and Angular JavaScript. We feel strongly that students should be able to use Exam Professor on any mobile device without installing yet another app. Nevertheless according to an email communication he announced development of app with release at the beginning of 2014.

Publishing test course example

Publishing this example is not possible. The service is orientated more to the exam type of quizzes with an evaluation after completing the whole test, rather than to the drilling method of learning.

8 Comparison of publishing portals

Web	founded	employees	courses	users	funding (\$)	pricing monthly (\$)	pricing per student	payments	marketplace
Udemy	2010	98	8,000	1 million	16 million	0	0-75%	PayPal	yes
Ruzuku	2012	4	3,000	20,000	50,000	79, 129	0	PayPal	no
Skillshare	2010	15	NA	30,000	3,6 million	0	0-75%	PayPal	yes
Pathwright	2012	3	100	47,000	0	0	\$4-7 and 4%	stripe, PayPal	no
Litmos	2008	3	NA	NA	acquired for \$2.6 million	49-1499	0	Shopify, PayPal	no
MindBites	2007	15	40,000	NA	\$1 million	0-125	25%-35%	PayPal	Yes
Quipper	2012	12	NA	1.7 million	4.2 million	0	NA	PayPal	yes
ProProfs	2005	50	100,000	1 million	NA	0-400	10%-20%	PayPal	yes
BrainScape	2010	24	NA	NA	\$1.7 million	0	NA	NA	yes
ExamProfessor	2006	4	70,000	756,000	0	0-99	15%-30%	PayPal	no

Table 8.1: Comparison of current publishing and selling e-learning portals according to the business data

Web	html	Lang.	video	audio	document formats	mobile	Facebook likes	Twitter followers
Udemy	no	10	avi, .mpg, .mpeg, .flv, .mov, .m2v, .m4v, .mp4, .rm, .ram, .vob, .wmv, .bin, youtube, vimeo	no	.pdf, slideshare	iOS app	104901	24576
Ruzuku	no	1	mp4	mp3	RTF, PDF, DOC, XSLX	no	216	1113
Skillshare	no	1	mp4, avi, .flv	no	Google Docs, PowerPoint, Prezi, Keynote	no	245225	42256
Pathwright	yes	1	youtube, vimeo, html embeded	no	html embedded	no	258	297
Litmos	yes	22	avi, .wmv, .mpg, .mov, .flv, .m4v, .mp4	mp3	PowerPoint, Keynote	no	289	1324
MindBites	no	1	flv, mp4, avi, mpg, mov, wmv, xvix, divx, m4v, mov	no	no	no	2231	2586
Quipper	no	11	no	no	no	Android iOS	2428	502
ProProfs	no	50	.flv, .mp4	mp3	.doc, .docs, .pdf, .ppt and .pptx.	HTML5	13240	2665
BrainScape	no	1	no	text to speech	no	iOS app	4395	2562
ExamProfessor	no	1	no	no	no	HTML5, AngularJS	155	68

Table 8.2: Comparison of current publishing and selling e-learning portals according to the possibilities of publishing and social media impact

PART III

A NEW E-LEARNING PORTAL

9 Introduction

“In times of Golden rush, sell shovels”

Cowboy story saying

At the introduction of this thesis a dramatic shift in a current educational demand of the population has been described. In order to meet this demand the teachers are in need to acquire new tools to deliver their lectures. In particular, teachers without university background can have difficulties to gain abilities to publish their education online.

In the second block of this work the matter of fact of current educational portals providing a good background for creating and selling passive video driven courses was demonstrated.

In the previous chapters also a few online tools for creating active tests, quizzes and exercises were inspected. These online services compete in different areas, but all described lack a few crucial functions of publishing quick drill education.

In the following chapters a new concept of an educational portal is described. It is dedicated to bring a simplicity, portability, intelligence and interactivity into online learning.

On the following pages users and their behavior are described, followed by a design of a visual guide representing the skeletal framework of the portal. Subsequently the algorithm for generation of quizzes is introduced and a general proposal for use of external development services is made. The major focus is on delivering a business plan of the portal.

At the end of this chapter the new design of an educational portal and portals described in previous chapter are compared.

10 Design of a new e-learning portal

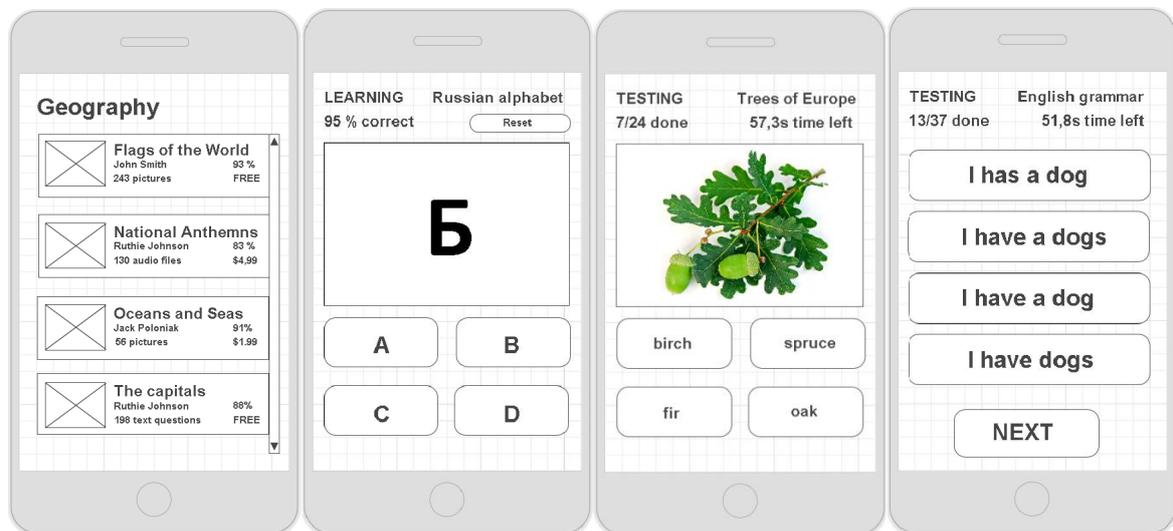
10.1 Users

In the following text the new portal is described from the perspectives of individual users.

Student

The majority of users are expected to be students using the platform on handheld devices such as smartphones.

Wireframes



Picture 6.1.1-4: Wireframes of mobile environment for students

Actions

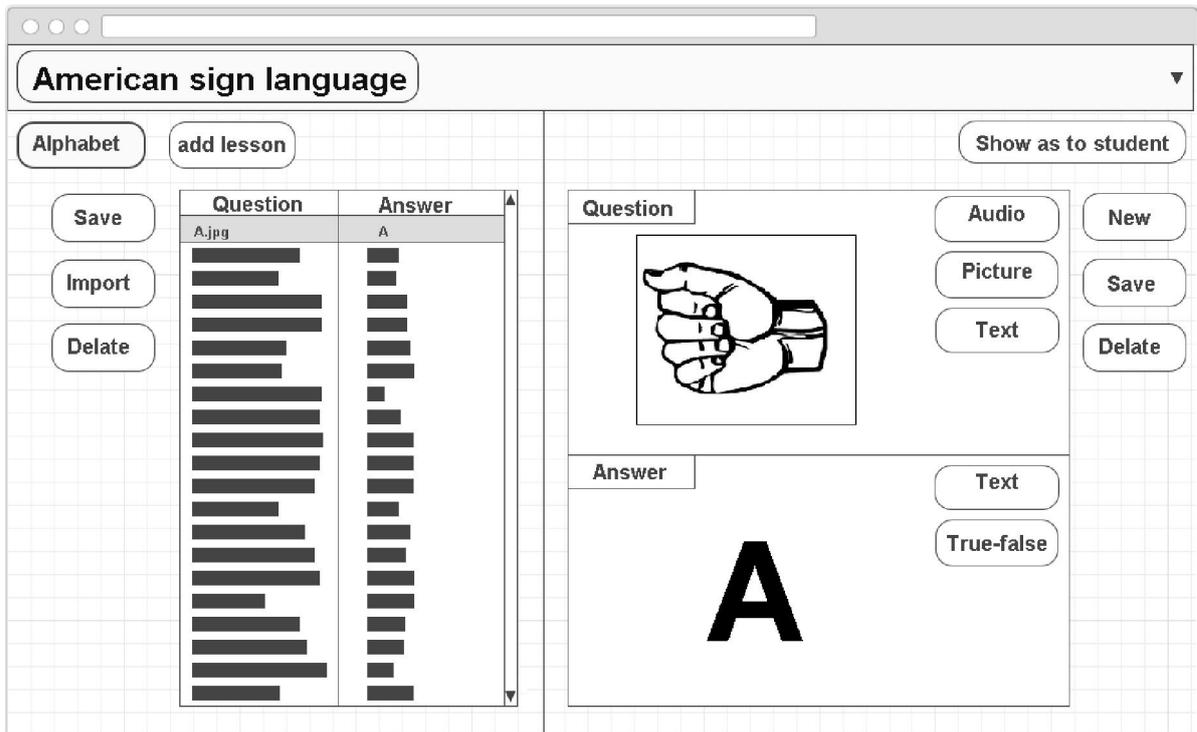
- Sign up - The use of third-party authorization such as Facebook will be supported
- Sign in
- Search for a course - text search and categorization (picture 6.1.1)
- Enroll into a course
 - Free course
 - Paid course - a purchase will be provided simply by a card payment
 - Learn - without a time limit questions will be asked one by one
 - Single-answer question (picture 6.1.2)
 - Multiple-answer question
 - Test - With a time limit student attempts to succeed in the test (answer a predefined amount of questions correctly, where every mistake decreases the time left).
 - Single-answer question (picture 6.1.3)

- Multiple-answer question (picture 6.1.4)

Teacher

Teachers will be the designers of the content. Their active attendance is therefore necessary prior to student participation. Their major contribution will be in creating courses. Every course will be created from questions paired with correct answers.

Wireframes



Picture 6.2: Wireframe of the course creative environment for a teacher

Activities

- Sign up - The use of third-party authorization such as Facebook will be supported
- Sign in
- Create a course
 - Define a category
 - Edit the course
 - Change the textual description and the icon
 - Set up the price
 - Create requirements for passing the course (or passing a lesson)
 - Mark the course as a private for purpose of an internal use
 - Add the content of the course (picture 6.2)
 - Add a new question (a different types of questions can be mixed)

- Unicode text (limited number of characters)
- Picture (limited size)
- audio file (mp3, limited size)
- Add related answer
 - Unicode text (limited number of characters)
 - True or false (in this case the answer will be just the verifier of the correctness of the question itself).
- Save the question-answer pair
- Delete the question-answer pair
- Import the question-answer pairs from external file in specified format (.csv or .xls)
- Save the current list of answer-questions
- Delete the current list of answer-questions
- Add a new lesson (a list) within a current course
 - Show the current lesson as to a student

A company

The portal can serve to organizations for training their employees or as an additional support of education.

Activities

- Sign up - The use of third-party authorization such as LinkedIn⁹ will be supported
- Sign in
- Assign a specific course to a specific audience (students)
- Invite external users to the course
- View the statistics and results of the assigned students

An HR department

Among users, students with superior skills can be found based on their effort in the educational platform. These students contact (with an agreement of a student) can be sold to recruitment departments of interested companies.

Activities

- Sign up - The use of third parties authorization such as LinkedIn will be supported
- Sign in
- See the general results of pseudonymous students in courses and in courses combinations

⁹ LinkedIn is a social networking website for people in professional occupations.

- Purchase the contacts of the desired students

10.2 Question generation algorithm

A major differentiation from the current quiz generation will be a smart algorithm used for generating questions.

First generation

For the first students of the course and at their beginning of the passing of the course, questions will be simply generated by picking a random question, a correct answer and a specified number of similar (textually) incorrect answers.

Personalization

The efforts of a student will be measured. Personalized learning metrics will be adapted such as a higher level of repetition of incorrectly answered questions.

Crowd-determined degree of difficulty

The efforts of all students of the course will be measured. Machine learning metrics will be adapted such as generation question-answer pairs that attracted people to do a mistake more often.

10.3 Technology

The portal will be developed by free open source software hosted on cloud platform **Heroku**.

Application programming interface (API)

The API will be created by a web application framework **Sinatra**. The core advantage for the development of a new portal is the minimalistic approach of this software enabling the easy but progressive adding of new features.

Web interface

For creating a web interface a **Ruby on Rails** web application framework will be used. The major advantage in the context of creating a new, simple educational platform is fast and relatively easy web development, whilst using well-known engineering patterns and principles.

Graphics

For creating a graphic interface a **Twitter Bootstrap** will be used. This free collection of tools will ensure simple and lucid HTML and CSS based design.

Database

The platform will generate diverse requests on a database system concerning the measurement of students-effort feedback and quick generation of questions based on these feedbacks. Therefore an object-relational database management system **PostgreSQL** will be used.

11 Business plan

In this chapter a project of new educational portal is designed in terms of a business plan that will loosely follow the structure of the plan of the startup SeeneDance.com [73].

11.1 Executive Summary

Smart Exercises educational portal

Contact person:

Name: Jan Bleha
Address: Mýtka 10, 538 21, the Czech Republic
Tel: +420 777 649 687
E-mail: JanBleha@gmail.com

The team

Jan Bleha - the chief executive officer

The chief executive officer of the project is master's degree student of Service Science Management and Engineering at the Faculty of Informatics of Masaryk University. He is experienced in marketing small technological companies, with leading variety of small projects and has broad communication and presentation skills. His vision is to connect people through technologies to learn and help each other.

Elevator pitch

We believe in education and our ambition is that the individual student is not only a receiver of knowledge, but also contributes to the learning process of others. The Smart Exercises educational portal will be an online community enabling anyone to create set of educational exercises, deliver them on variety of platforms and through internal machine learning algorithm connect them with the data of the students' effort in order to make the studying process more effective.

Customers and users

The main customers will be individuals seeking for smart, quick and interactive ways of education on their mobile devices. Other possible customers are institutions looking for a platform for delivering their education in a smart way to a certain audience (e.g. company employees). Additionally also recruitment department centers can find value in connecting with top students of the platform.

In addition to the customers, users will be individual teachers sharing their expertise and students studying the free courses.

Problem

Currently there is no simple portal enabling teachers to create, publish and sell sets of smart and simple exercises on a variety of platforms. Furthermore, there is also a lack of options for a non-professional in IT to use personalization and a machine learning approach in educational context.

Solution

The solution is a multiplatform educational portal with a set of tools for publishing and selling simple educational question based courses. This portal will be connected with an algorithm for creating smart exercises, based on the textual similarity of possible answers, personal effort of each student and on the efforts of all students previously studying those exercises.

Business model

To start with the business model can use the revenue share from teachers selling courses. Additionally fees from organizations privately publishing their courses to their audience can be charged. Also direct marketing and advertising fees to specific segments based on their educational habits can be introduced. As an optional marginal income also providing contacts to human resources departments from exceptional students of the exercises can be established.

Competitive advantage

The major competitive advantage will be the smart algorithm for generation exercises in an open multiplatform environment.

11.2 Concept

The company will be based in the Czech Republic, offering the services worldwide over the internet.

With the technological revolution and the dramatic shift in acquiring information of current, young generation of people (chapter 1) there is a new world of opportunities for providing educational content.

The wide spectrum of current desktop based e-learning tools is quickly becoming obsolete as the use of learning on mobile phones is rapidly increasing (chapter 2.3).

Additionally, Internet has developed from being a place to retrieve information to a living environment for creating and sharing information. The current trend also brings a personalization, so that content fits individual needs (chapter 2.1).

Based on these discoveries a project of The Smart Exercises is designed. It brings together the teachers and students into one platform for both sharing and also studying educational content. It enables the use of the service on different devices. It incorporates machine learning algorithms for setting up the level of difficulties based on the specific audience.

The company is determined to bring democratization into teaching and learning on the mobile phones.

11.3 Product

The business will be an online service for teachers, students, educational centers and training departments.

The portal will provide:

- Series of simple tools for publishing educational courses in the form of interactive smart exercises including smart algorithm to set up the level of difficulty based on both effort of an individual student and all the students previously taking the exercises
- Tools to sell courses on a wide spectrum of devices
- A web portal for students to take simple exercises of various topics on various platforms
- A system to deliver internal trainings and educational courses to a private audience. Tools to discover the weak points of knowledge of certain groups and focus the training on those spots further on.
- A platform for providing contacts to interested employers for exceptional students in specific fields.
- A direct advertisement place to reach students with specific skills.

End to end supports for teachers and companies

Careful policies, guidelines and the appropriate staff to provide support will be established. Online help, live chat and a set of customized tutorials to help resolve customer situations will also be available and provided by qualified personnel. Furthermore, a ticket system will be implemented to ensure customer requests being successfully resolved and tracked. Especially in case of business clients, such as big companies using this service to provide trainings to their employees, the customer retention is an essential goal and holds the major importance in long-term growth.

Value added benefits

- A new channel for teachers to attract students
- More effective manner of education available in any smart phone
- A quick way to train a specific audience
- A quick way to obtain a feedback about education of a specific audience

11.4 Expansion Plan

The organization plans to start with a simple generator of free exercises to attract the critical mass [74] of students. At the beginning the tool will incorporate only the basic, most elementary features. Slowly, based on the communication and needs of the users, the new features will be added. This approach will continue in respect to the Lean startup methodology [75].

In the 2nd phase of the company's expansion the relationship with quality teachers will be established and their courses will be provided for sale. Additionally, the reviews and authorization of courses will be developed. This will continue to the commencement of the platform as an open tool for everyone to create and sell their educational content.

In the 3rd phase, the robustness of the platform will already have been ensured and the service will be offered for private trainings to companies and educational centers. Also, a direct marketing tool focused on students behavior will be established, as well as a tool for providing contacts to the top students.

Primary Objectives

The primary objective is to develop a simple online platform that provides basic tools to create share and sell smart educational exercises on a variety of platforms.

11.5 Vision

The vision of the company is to provide a simple mutual link between students and teachers in order to make their education more effective.

Core Values

Fundamental beliefs:

- Education
- Simplicity
- Interactivity
- Openness
- Multi-platform approach
- Personalization

Core Purpose

The core purpose is represented by a slogan “Smartly get smarter”. The company aims at

- Providing a channel to connect students and teachers
- Eliminating the complexity of setting up the level of difficulty of exercises
- Shortening time and money spent on company trainings

Visionary goals

The following categories of visionary goals are set:

Role model

Democratization of education in simple, interactive and smart way is vital topic of the project. In this respect the goal is to become a successful startup that combines the strength of Udemy (chapter 6.1) when it comes to democratizing education, vocabulary.com¹⁰ when it comes to smart machine learning, duolingo.com (chapter 3.3) in its interactive gamification approach and tumblr.com¹¹ in terms of simplicity to publishing online any content on any device.

Target

- Becoming the first place to go on mobile devices for an interactive way of education.
- Providing measurable value in internal company trainings
- Inspire teachers to provide a creative and broad spectrum of educational content in all possible areas
- Becoming an external source for textbook creators and educational centers for practicing their materials and giving these institutions feedback on level of difficulties of education they provide

11.6 Business model

The educational portal can provide a multi-source revenue model.

Revenue share of sold course

As main revenue stream can be used commission from sold courses. This fee can vary, but its general value has been set by the Appstore and the Google Play store to 30% of the sales [76]. So at the start the portal would follow the suit and set the same fee.

¹⁰ Vocabulary.com is an educational web for improving English vocabulary using advanced adaptive learning systems.

¹¹ Tumblr is a popular microblogging site with cross-platform mobile apps

- No commission for free public courses
- 30% commission of sales for public audience
- Favorable agreements for VIP teachers

Private education and trainings

A second source of generating revenue is selling the service to provide education for closed groups of people - for example internal trainings for employees. Commission can also vary. As a basic model, there will be a monthly fee concerning a number of users. Additionally advanced functions (such as feedback data recognizing the weak points of students) can be sold.

- A constant fee per user (student) and course
- A prepaid commission for a limited amount of interactions (e.g.: courses taken)
- A prepaid commission for a limited amount of users

Advertisement

Targeting to a wide audience will provide us with a lot of data about users. Information about their skills and teaching habits can be collected. These data can serve for personalizing advertising for example for educational centers for the advertisement of follow-up education. Advertisement can be focused on the following:

- Providing advertising space focused on a specific audience in terms of their education (efforts)
- Selling data about levels of difficulties of a variety of subjects to educational companies

Providing contact of extraordinary students

Running an educational online portal for a mass amount of people can attract extraordinary talented individuals with specific skills demanded by labor market. Provided there is an agreement with students, their contact information can be sold to interested potential employers.

11.7 Business Model Canvas

The concept of a strategic management template for developing a new business model according to the book Business Model Generation [77] is designed below.

Customer Segment

- Students - individuals interested in learning specific content
- Teachers - individuals or companies interested in publishing and selling interactive learning content
- Organizations - communities interested in delivering learning content to their members

- HR departments - communities interested in connecting students with specific skills

Value proposition

- For students - a simple way to learn in an interactive way
- For teachers - a platform to publish and sell simple e-learning courses especially focused on mobile devices
- For organizations - a new simple channel for delivering education to their members
- For HR departments - a simple way to contact potential employees based on their educational effort.

Channels

- Internet - content and all communication will be provided online via web portal for desktops and via app for smart devices

Customer Relationship

- Involvement in guarantee of quality for students
- Money back policy for students and organizations
- Tutorials and high level support for teachers and organizations

Revenue Streams

- Percentage commissions from courses sold for teachers
- Fees for organizations for providing their courses to a private audience
- Advertisement and direct marketing according to specific characteristics of students

Key resources

- Content management system
- E-learning courses

Key Activities

- Web platform and app development and maintenance

Key Partnership

- First rate and well known educators and educational institutions will be provided with a new channel for delivering their education and they will provide a marketing channel to increase the user base
- Educational institutions, information providers, idea makers will also provide a marketing channel to increase the user base

Cost Structure

- Formation

- Development and maintenance of the web portal and synchronized apps for mobile devices
- Marketing (with a special focus on affiliate marketing)

11.8 Target Market Segmentation

Services provided by the company vary, and can bring value to a variety of market segments. The company has classified potential customers into the following categories:

Teachers

The Smart Exercises portal is primarily focusing on teachers without programming knowledge. The portal will enable them to simply create, publish and sell educational courses based on small exercises. Additionally, it will facilitate their effort to set a level of difficulty of specific parts of their courses by machine learning algorithms. The service will also provide a feedback tool for teachers to see where their students make mistakes.

Students

Students are the core users and also customers of the platform. The company shall make an effort to acquire a sufficient amount of students, by bringing them simple interactive education to their mobile phones.

Companies and educational centers

Companies' trainings can also provide an interesting market for the Smart exercise generator.

HR departments

Additionally, recruitment departments of companies interested in extraordinary students with specific skills can also be considered as a market segment. These measures can be easily adapted into inquiring achievements of students.

11.9 Competitive Advantages

Machine learning for everyone

The major innovation and competitive advantage is the use of the machine learning approach. This feature brings an automatic crowd-determined degree of difficulty into the generation of exercises.

Personalization

Machine learning goes hand in hand with the personalization of the education to needs and behavior of the individual student. The quizzes are not generated randomly but take into account the student's previous behavior in order to increase the efficiency of educational process.

Smartphone availability

The portal will be focus on Smartphone devices.

Quick question generation

The portal will enable the simple composition of a broad spectrum of exercises from diverse formats of texts, pictures and audio records.

11.10 Marketing Plan

The company plans to run a variety of marketing campaigns in order to attract a broad audience of different segments.

Initial marketing phasesPhase 1: Lead Phase

At the beginning there is need for a proof of concept and the first iteration of the product development. This will be executed aiming at users in a closer geographical location (namely the Czech Republic). Word of mouth marketing strategy can be used to attract those users.

An additional global audience of early adopters will be attracted in order to test and develop new features of the portal. The constant measuring of users' behavior will be implemented with free tools such as Google Analytics.

Phase 2: Review Phase

In this phase the focus will be on obtaining reviews and feedback. The platform will be active and used for purposes of expert reviews. The feedback of the specialist audience will be used for both, revisions of the current development and for publishing texts for extra publicity (in case of positive reviews).

Phase 3: Launch Phase

The focus in the last phase, i.e. launching phase will be on attracting a broad audience. The Company will attract potential customers by variety of campaigns including traditional methods of publicity like internet ads. Additionally a variety of PR articles will be delivered. Reviewing of the platform will continue with promotion of positive reviews of well-established servers.

Online Advertising

The product is an internet based platform. For the global audience the advertisement will be entirely online.

Social media marketing

The crucial part of the promotion will be done through focusing on social media. Benefits of this decision will improve Company branding, spark word-of-mouth advertising, increase customer loyalty and trust and increase audience reach and influence. The social media repertoire will consist of following:

Facebook

- A Facebook page will be created in order to establish a relationship with interested individuals.
- The portal will enable to sign in using a Facebook account.
- Users will have an opportunity to share their effort and compare their results with their Facebook friends.

Twitter

- A company account will be created to establish a relationship with interested individuals and companies.
- A service PayWithATweet.com¹² will provide the additional features and help to spread the awareness about the product.

Google+

- A Google+ button will be added to every course. This will be used for purposes of collecting personal information (demographics, location) and increasing Search engine optimization for the Google ranking algorithm.
- A profile of the company will be set up.

Blog

- For longer descriptions and especially for establishing a relationship with a professional audience a weblog will be created.

YouTube

- The channel will be created and filled with videos related to both a product introductions and entertainment viral videos with educational themes.

¹² Paywithatweet.com is a simple web payment system, where people pay with the value of their social network.

Affiliate marketing

An affiliate program aiming at paying per conversions will be established. Relevant companies will be contacted with the offer of cooperation. First of all, a connection will be established with the big affiliate marketing aggregators. Subsequently, separate advantageous agreements will be made.

Guerilla marketing

Oxford Dictionary defines Guerilla marketing as *“innovative, unconventional, and low-cost marketing techniques aimed at obtaining maximum exposure for a product”*. For a start-up company with a limited marketing budget, guerilla marketing presents an interesting channel to attract the audience. The company will focus on viral marketing.

Viral Marketing

The company will create and share entertainment videos with educational topics. It will also encourage users to upload their videos relating to education.

11.11 Exit Strategy

With the broad market of e-learning and providing a specific competitive advantages a several exit strategies exists.

Acquisition

Acquisition by another company is an attractive option. The described startup company concentrates on the technological niche market of providing creative environment for smart exercises within a huge e-learning market. Providing unique and not yet established functionalities can be engaging for evolvement of already established educational online products.

Merger

A smart generation of quizzes can complement other educational startups that are focused more on different aspects of e-learning. Option of strategic merger can also enable connection of competitors and link their technological advantages.

12 Comparison with existing platforms

The Smart Exercises portal differs from the portals described in chapter 6 by its focus on exercises solely. Even though some of those portals previously described support creating exercises, none of them provides personalization (the generation of exercises based on the previous effort of the student) or the crowd-determined level of difficulties. Furthermore, none of the services in chapter 6 provide support of generating quizzes based on sets of question-answer pairs.

Unlike the platforms focused on creating exercises, as described in chapter 7, the Smart Exercises portal enables the generation of multiple choice questions from question-answer pairs. Furthermore it incorporates a crowd-determined level of difficulty of generated quizzes. The comparison of features is depicted on the table 12.1.

	Quipper	ProProfs	Brain Scape	Exam professor	Smart Exercises
Generation from question-answer pairs	No	No	Yes	No	Yes
Multiple choice questions	Yes	Yes	No	Yes	Yes
Personalization	No	No	Yes	No	Yes
Crowd-determined level of difficulty	No	No	No	No	Yes
Pictures	No	Yes	Yes	Yes	Yes
Audios	No	Yes	Yes	No	Yes
Upload of a question set	No	Yes	Yes	No	Yes

Table 12.1: Comparison of quiz-based e-learning tools enabling selling content with the new educational concept

13 Conclusion

The thesis described the current trends of online education and compared different e-learning portals for publishing and selling educational content. Conditions for a new educational portal have been identified. The niche in the online learning market was recognized as personalized simple interactive quiz-based education held on the mobile devices.

Based on the findings a project of a new educational portal was designed. Delivered technical guide recognized the crucial need for personalization and simplicity. Eventually the business plan identified business strategies of a tool for creating and selling quizzes on mobile devices. Comparing the project to the previously described portals discovered the competitive advantages on the educational market.

Designed concept of the educational platform differs from described services in simplicity of generating quizzes, orientation on mobile devices and in personalize and crowd-determined level of difficulty.

The thesis fulfilled the assignment of describing current e-learning services aiming at the new online portals. Business perspectives and publishing options of these portals were compared. Design of the new portal respected the second part of the assignment, covering specification of users and actions, wireframes and mainly focusing on the introduction of the business plan.

The findings of this thesis are relevant for further development of the project and for expansion of already established educational services. The description of the current e-learning portals can also be used as a base for creating a comprehensive guide for teachers searching for a place to publish and sell their education online.

Bibliography

- [1] ZAMEER, A. In: *Virtual Education System*. Virtual University of Pakistan: 2010 [cit. 2014-01-05].
- [2] ČÁP, J. *Psychologie pro učitele*. Psychologie pro učitele. Vyd. 1. Praha: Portál, 2001, 655 s. s. ISBN 80-717-8463-X.
- [3] ZOUNEK, J. a P. SUDICKÝ. *E-learning: učení (se) s online technologiemi*. E-learning. Vyd. 1. Praha: Wolters Kluwer Česká republika, 2012, xix, 226 s. s. ISBN 978-80-7357-903-6.
- [4] COBB, J. *Leading the learning revolution: the expert's guide to capitalizing on the exploding lifelong education market*. Leading the learning revolution. New York: AMACOM, c2013, xi, 228 p. s. ISBN 08-144-3225-5.
- [5] LECHTER, B.R.T.K.W.S.L. *Rich dad poor dad: what the rich teach their kids about money - that the poor and middle class do not!* Rich dad poor dad. 1st Borders ed. New York: Business Plus, 2009. ISBN 978-044-6568-814.
- [6] NICHOLSON, P. A History of E-Learning. In: *Computers and Education*. Dordrecht: Springer Netherlands, 2007, s. 1. DOI 10.1007/978-1-4020-4914-9_1. Available on: http://www.springerlink.com/index/10.1007/978-1-4020-4914-9_1
- [7] FUCHS, C. *Internet and society: social theory in the information age*. Internet and society. orig. publ.: 2008. London: Routledge, 2010. ISBN 978-041-5889-926.
- [8] AMIT, A. Web 3.0 concepts explained in plain English. In: *Labnol.org*. 2009 [cit. 2013-12-17]. Available on: <http://www.labnol.org/internet/web-3-concepts-explained/8908/>
- [9] OBLINGER, D. a J.L. OBLINGER. *Educating the net generation*. Educating the net generation. Boulder, CO: EDUCAUSE, 2005. ISBN 0-9672853-2-1. Available on: <https://net.educause.edu/ir/library/pdf/pub7101.pdf>
- [10] KOETSIER, J. 800 million Android smartphones, 300 million iPhones in active use by December 2013, study says. In: *venturebeat.com*. 2013 [cit. 2013-12-17]. Available on: <http://venturebeat.com/2013/02/06/800-million-android-smartphones-300-million-iphones-in-active-use-by-december-2013-study-says/>

-
- [11] BOSOMWORTH, D. Statistics on mobile usage and adoption to inform your mobile marketing strategy. In: *smartinsights.com*. 2013 [cit. 2013-12-17]. Available on: <http://www.smartinsights.com/mobile-marketing/mobile-marketing-analytics/mobile-marketing-statistics/>
- [12] DEJONG, R. What Do MOOCs Cost? In: What Do MOOCs Cost? [online]. © 2013 [cit. 2013-12-17]. Available on: http://www.mindingthecampus.com/originals/2013/09/what_do_moocs_cost.html
- [13] Will MOOCs kill university degrees? In: *economist.com*. 2013 [cit. 2013-12-17]. Available on: <http://www.economist.com/blogs/economist-explains/2013/10/economist-explains>
- [14] O'BRIEN, K. a P. CONNORS. Development and evidencing achievement of graduate learning outcomes in deakin university's enhanced mooc. In: *EDULEARN13 Conference*. Deakin university. ISBN 9788461638222.
- [15] PAPPANO, L. The Year of the MOOC. In: *nytimes.com*. 2013 [cit. 2013-12-17]. ISMN ISSN 03624331. Available on: http://www.nytimes.com/2012/11/04/education/edlife/massive-open-online-courses-are-multiplying-at-a-rapid-pace.html?pagewanted=all&_r=0
- [16] PARR, C. Mooc completion rates 'below 7%'. In: *timeshighereducation.co.uk*. 2013 [cit. 2013-12-17]. Available on: <http://www.timeshighereducation.co.uk/news/mooc-completion-rates-below-7/2003710.article>
- [17] KOLOWICH, S. How edX Plans to Earn, and Share, Revenue From Its Free Online Courses. In: *chronicle.com*. 2013 [cit. 2013-12-17]. Available on: <http://chronicle.com/article/How-EdX-Plans-to-Earn-and/137433/>
- [18] Possible Company Monitization Strategies. *Possible Company Monitization Strategies: Schedule 1 of the contract between Coursera and the University of Michigan*. 2013 [cit. 2013.]. Available on: <https://www.documentcloud.org/documents/400864-coursera-fully-executed-agreement.html#document/p40>
- [19] HEUSSNER, K.M. Coursera hits \$1M in revenue through verified certificates. In: *gigaom.com*. 2013 [cit. 2013-12-17]. Available on: <http://gigaom.com/2013/09/12/coursera-hits-1m-in-revenue-through-verified-certificates/>
- [20] FOWLER, G.A. An Early Report Card on Massive Open Online Courses. In: An Early Report Card on Massive Open Online Courses [online]. © 2013 [cit. 2013-12-17]. Available

- on: <http://online.wsj.com/news/articles/SB10001424052702303759604579093400834738972>
- [21] DESANTIS, N. Harvard and MIT Put \$60-Million Into New Platform for Free Online Courses. In: *chronicle.com*. 2012 [cit. 2013-12-17]. Available on: <http://chronicle.com/blogs/wiredcampus/harvard-and-mit-put-60-million-into-new-platform-for-free-online-courses/36284>
- [22] Schools. In: Schools [online]. © 2013 [cit. 2013-12-17. Available on: <https://www.edx.org/schools>
- [23] Udacity Launches Student-Powered Effort to Subtitle 5,000+ Educational Videos. In: Udacity Launches Student-Powered Effort to Subtitle 5,000+ Educational Videos [online]. © 2013 [cit. 2013-12-17. Available on: <http://about.amara.org/udacity-launch/>
- [24] CLARK, D. Startup Udacity Builds Bankroll for Online Learning. In: *wsj.com*. 2012 [cit. 2013-12-17]. Available on: <http://blogs.wsj.com/digits/2012/10/25/startup-udacity-builds-bankroll-for-online-learning/>
- [25] GANNES, L. Education Start-Up Udacity Raises Funds From Andreessen Horowitz. In: *Allthingsd.com*. 2012 [cit. 2013-12-17]. Available on: <http://allthingsd.com/20121025/education-start-up-udacity-raises-funds-from-andreessen-horowitz/>
- [26] KAMENS, A. A Q&A with Salman Khan, founder of khan academy. In: *fastcompany.com*. 2013 [cit. 2013-12-17]. Available on: http://live.fastcompany.com/Event/A_QA_With_Salman_Khan
- [27] KAMENS, B. Why doesn't Khan Academy use ads on their YouTube videos to monetize? In. Available on: <http://www.quora.com/Khan-Academy/Why-doesnt-Khan-Academy-use-ads-on-their-YouTube-videos-to-monetize>
- [28] Our Supporters. In: Our Supporters [online]. © 2013 [cit. 2013-12-17. Available on: <https://www.khanacademy.org/about/our-supporters>
- [29] LARDINOIS, F. Duolingo Raises \$15M Series B Round Led By NEA, Will Expand To More Languages And To Mobile Soon. In: *techcrunch.com*. 2013 [cit. 2013-12-17]. Available on: <http://techcrunch.com/2012/09/17/duolingo-raises-15m-series-b-round-lead-by-nea-will-expand-to-more-languages-and-to-mobile-soon/>
- [30] SIMONITE, T. The Cleverest Business Model in Online Education. In: *technologyreview.com*. 2012 [cit. 2013-12-17]. Available on:

- <http://www.technologyreview.com/news/506656/the-cleverest-business-model-in-online-education/>
- [31] BIGGS, J.B., C.S.K. TANG a J.B. BIGGS. *Teaching for quality learning at university: what the student does*. Teaching for quality learning at university. 3rd ed. /. Maidenhead: McGraw-Hill/Society for Research into Higher Education, 2007, xviii, 335 p. s. ISBN 9780335221271.
- [32] RIP, E. Instructure Looks To Take On The Blackboards And Moodles In A Multi-Billion Dollar eLearning Market. In: *techcrunch.com*. 2013 [cit. 2014-01-05]. Available on: <http://techcrunch.com/2013/06/05/instructure-lands-a-hefty-30m-to-take-on-the-blackboards-and-moodles-of-a-multi-billion-dollar-elearning-market/>
- [33] WEISBERG, K. Startup Profile: Q+A with Udemy.com Co-Founder Gagan Biyani. In: *lalawag.com*. 2011 [cit. 2013-12-02]. Available on: <http://lalawag.com/2011/01/24/startup-profile-qa-with-udemy-com-co-founder-gagan-biyani/>
- [34] YEUNG, K. Udemy's online learning marketplace has 8k courses, 800k students, and launches new 'Summer' grant. In: *thenextweb.com*. 2013 [cit. 2013-12-02]. Available on: <http://thenextweb.com/insider/2013/06/18/udemys-online-learning-marketplace-has-8k-courses-800k-students-and-launches-new-summer-grant/>
- [35] PATTERSON, B. Top 10 Udemy Instructors Earned Combined Course Revenue of Over \$5 Million; Company Announces "Summer of Teaching" Grant. In: *businesswire.com*. 2013 [cit. 2013-12-02]. Available on: <http://www.businesswire.com/news/home/20130618006117/en/Top-10-Udemy-Instructors-Earned-Combined-Revenue>
- [36] BIYANI, G. How Udemy got oversubscribed. In: *Venture Hacks: Good advice for startups*. 2010 [cit. 2013-12-02]. Available on: <http://venturehacks.com/articles/udemy>
- [37] Udemy. In: *signl.com*. 2013 [cit. 2013-12-13]. Available on: <http://signl.com/company/udemy/>
- [38] GONDER, T. Startup Udemy is Building a Virtual Classroom. In. Startup Udemy is Building a Virtual Classroom [online]. © 2010 [cit. 2013-12-02]. Available on: <http://under30ceo.com/startup-udemy-is-building-a-virtual-classroom/>
- [39] COLAO, J.J. Excel vs. AI: Udemy Vies For A Chunk Of The \$3.9 Trillion Education Market. In. Excel vs. AI: Udemy Vies For A Chunk Of The \$3.9 Trillion Education Market

-
- [online]. [New York, N.Y.: Forbes Inc., © 1918 [cit. 2013-12-02. Available on: ISMN ISSN 00156914. Path: <http://www.forbes.com/sites/jjcolao/2012/12/07/excel-vs-ai-udemy-vies-for-a-chunk-of-the-3-9-trillion-education-market/>
- [40] CHAVANU, B. Use Your Expertise: Author Your Own Money Making Course Using Udemy. In: *makeuseof.com*. 2013 [cit. 2013-12-02]. Available on: <http://www.makeuseof.com/tag/author-your-own-money-making-course-using-udemy/>
- [41] PATTERSON, B. Udemy Launches Sitewide Support for 10 Languages, Announces One Millionth Student. In: *businesswire.com*. 2013 [cit. 2013-12-02]. Available on: <http://www.businesswire.com/news/home/20130806005505/en/Udemy-Launches-Sitewide-Support-10-Languages-Announces>
- [42] Udemy. In: *crunchbase.com*. 2013 [cit. 2013-12-02]. Available on: <http://www.crunchbase.com/company/udemy>
- [43] Udemy Revenue Share: What Can I Make Teaching Online? In: Udemy Revenue Share: What Can I Make Teaching Online? [online]. © 2013 [cit. 2013-12-02. Available on: <http://support.udemy.com/knowledgebase/articles/159331-udemy-revenue-share-what-can-i-make-teaching-onli>
- [44] Android App. In: *udemy.com*. 2013 [cit. 2013-12-13]. Available on: <http://support.udemy.com/knowledgebase/articles/149135-android-app>
- [45] Ruzuku: profile. In: *Angel.co*. 2013 [cit. 2013-12-08]. Available on: <https://angel.co/ruzuku>
- [46] STONE, S. Ruzuku – A New Online Learning Platform. In: *ethicallaunch.com*. 2012 [cit. 2014-01-05]. Available on: <http://ethicallaunch.com/ruzuku-review>
- [47] Ruzuku. In: *signl.com*. 2013 [cit. 2014-01-05]. Available on: <http://signl.com/company/ruzuku/>
- [48] SCHONFELD, E. P2P Learning Startup Skillshare Gets \$550,000 From Founder Collective and SV Angel. In: *techcrunch.com*. 2011 [cit. 2013-12-09]. Available on: <http://techcrunch.com/2011/05/03/skillshare-550000/>
- [49] WORTHAM, J. Skillshare Raises \$3.1 Million to Turn Everyone Into Teachers. In: *nytimes.com*. 2011 [cit. 2013-12-13]. Available on: <http://bits.blogs.nytimes.com/2011/08/16/skillshare-raises-3-1-million-to-turn-everyone->

into-teachers/

- [50] HEUSSNER, K.M. With Skillshare's online classes, instructors get shot at bigger bucks. In: *Gigaom.com*. 2012 [cit. 2014-01-04]. Available on: <http://gigaom.com/2012/11/28/with-skillshares-online-classes-instructors-get-shot-at-bigger-bucks/>
- [51] Skillshare: profile. In: *crunchbase.com*. 2013 [cit. 2013-12-09]. Available on: <http://www.crunchbase.com/company/skillshare>
- [52] How Skillshare Is Transforming Education as We Know It. In: *maschable.com*. 2012 [cit. 2013-12-09]. Available on: <http://mashable.com/2012/04/23/skillshare-teaching-learning/>
- [53] Class Guidelines: Getting Started Teaching. In: *skillshare.com*. 2013 [cit. 2013-12-09]. Available on: <http://www.skillshare.com/teach/help/class-guidelines/1279212>
- [54] How do I get paid? In. How do I get paid? [online]. © 2013 [cit. 2013-12-13]. Available on: <http://help.skillshare.com/customer/portal/articles/1228575-how-do-i-get-paid->
- [55] OLADIPO, J. Pathwright tackles the course of education. In: *greenvillejournal.com/*. 2013 [cit. 2013-12-13]. Available on: <http://greenvillejournal.com/business/2122-pathwright-tackles-the-course-of-education.html>
- [56] The Iron Yard. In: *seed-db.com*. 2014 [cit. 2014-01-05]. Available on: <http://www.seed-db.com/accelerators/view?acceleratorid=7008>
- [57] The Lamp Post Guild. In: *kickstarter.com*. 2012 [cit. 2013-12-13]. Available on: <http://www.kickstarter.com/projects/pathwrightpress/the-lamp-post-guild>
- [58] Litmos. In. Litmos [online]. © 2013 [cit. 2014-01-05]. Available on: <http://www.crunchbase.com/company/litmos>
- [59] NAIR, R. Callidus Software Acquires Litmos. In: *Marketwired.com*. 2011 [cit. 2013-12-12]. Available on: <http://www.marketwired.com/press-release/callidus-software-acquires-litmos-nasdaq-cald-1525270.htm>
- [60] Sell your Courses Online. In. Sell your Courses Online [online]. © 2013 [cit. 2013-12-13]. Available on: <http://www.litmos.com/learning-management-system/sell-online-courses/>
- [61] WEISENTHAL, J. How-To Video Site MindBites Raises \$1 Million First Round. In: *washingtonpost.com*. 2008 [cit. 2013-12-12]. Available on: How-To Video Site MindBites

Raises \$1 Million First Round

- [62] MindBites. In: MindBites [online]. © 2013 [cit. 2013-12-13]. Available on: <http://www.crunchbase.com/company/mindbites>
- [63] MARTINC. E-learning start-up Quipper raises £2.3m in funding. In: *LearnPatch*. 2012 [cit. 2013-12-06]. Available on: <http://learnpatch.com/2012/06/e-learning-start-up-quipper-raises-2-3m-in-funding/>
- [64] Quipper: profile. In: *CrunchBase.com*. 2013 [cit. 2013-12-06]. Available on: <http://www.crunchbase.com/company/quipper>
- [65] BUTCHER, M. Quipper Raises \$3.6M For Its Fun Take On E-Learning. In: *Techcrunch.com*. 2012 [cit. 2013-12-06]. Available on: <http://techcrunch.com/2012/05/18/quipper-raises-3-6m-for-its-fun-take-on-e-learning/>
- [66] About ProProfs. In. Available on: <http://www.proprofs.com/about.shtml>
- [67] SCHMIDT, W. ProProfs Launches New Quiz Creation Platform. In: *Techco.com*. 2013 [cit. 2013-12-11]. Available on: <http://tech.co/proprofs-launches-new-quiz-creation-platform-2013-08>
- [68] ProProfs. In. ProProfs [online]. © 2013 [cit. 2013-12-13]. Available on: <http://www.crunchbase.com/company/proprofs>
- [69] NAGEL, D. ProProfs Quiz Maker Gets Centralized Assessment Management, Custom Themes. In: *thejournal.com*. 2013 [cit. 2013-12-11]. Available on: <http://thejournal.com/articles/2013/10/08/proprofs-quiz-maker-gets-centralized-assessment-management-custom-themes.aspx>
- [70] Fundraising: Brainscape - The intelligent mobile education platform. In: *angel.co*. 2013 [cit. 2013-12-12]. Available on: <https://angel.co/brainscape/fundraising>
- [71] Frequently Asked Questions. In: *brainscape.com*. 2013 [cit. 2013-12-12]. Available on: <http://www.brainscape.com/marketing/faq.html>
- [72] BRANNAN, D. Interview with CEO of ExamProfessor. In: *doeswhat.com*. 2013 [cit. 2013-12-12]. Available on: <http://doeswhat.com/2013/04/02/interview-with-david-brannan-exam-professor/>

- [73] FÁBIÁN, A. *Dance as a Service - Case Study*. Dance as a Service - Case Study. Brno: 2013. Diploma Thesis. Masaryk University.
- [74] GLADWELL, M. *The tipping point how little things can make a big difference*. The tipping point how little things can make a big difference. Boston, Mass: Back Bay Books/Little, Brown and Co, 2002. ISBN 9780759574731.
- [75] RIES, E. *The lean startup: how today's entrepreneurs use continuous innovation to create radically successful businesses*. The lean startup. 1st ed. New York: Crown Business, c2011, 320 p. s. ISBN 9780307887894.
- [76] SCHRAMM, M. Amazon Kindle moves to App Store's 70/30 revenue split. In: *tuaw.com*. 2010 [cit. 2013-12-17]. Available on: <http://www.tuaw.com/2010/01/20/amazon-kindle-moves-to-app-stores-70-30-revenue-split/>
- [77] OSTERWALDER, A., Y. PIGNEUR a T. CLARK. *Business model generation: a handbook for visionaries, game changers, and challengers*. Business model generation. Hoboken, NJ: Wiley, c2010, 278 p. s. ISBN 9780470876411.