



Диджитализация высшего образования

Состояние и тенденции в области цифрового преобразования сектора образования

Харша Ратнавира НУЕН

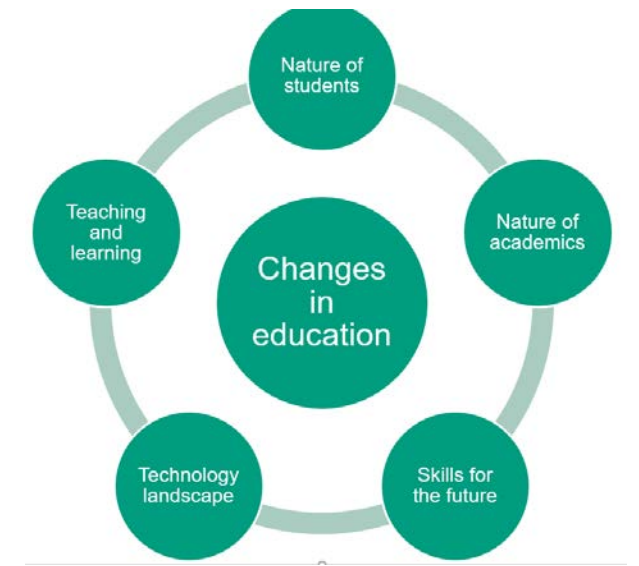
Наши университеты меняются

модель тройной спирали инноваций

- **Вневременное видение:** Университеты имеют основополагающее значение для создания, оценки, поддержания и распространения знаний..
- **Наблюдаемые изменения:** Природа и сфера охвата, структуры управления, характер и ценность знаний, плата за обучение, универсальные рейтинги, совместные / двойные / ассоциированные программы получения степени, отношения с экономикой и обществом - фокус на будущего работодателя....

- **The timeless visions:** Universities are fundamental to the creation, evaluation, maintenance and dissemination of knowledge.
- **Observed changes:** Nature and scope, governance structures, nature and value of knowledge, tuition fees, universal rankings, joint/double/Associated degree programs, relationship with the economy and society – focus on the future employer....





Реагирование на изменения

- Изменяющиеся потребности учащихся и влияние цифровых технологий на преподавание и обучение требуют:
 - университеты должны понимать, что создавать знания и делиться ими со студентами уже недостаточно
 - университеты должны быть намного более саморефлексивными и самокритичными, когда речь заходит о том, что они делают, с большим вниманием относится к студентам

Responding to change

- The changing needs of the learners and the impact of digital technologies on teaching and learning require:
 - universities must understand that creating knowledge and sharing it with students is no longer enough
 - universities will have to be much more self-reflective and self-critical when it comes to what they do, with more focus on the students

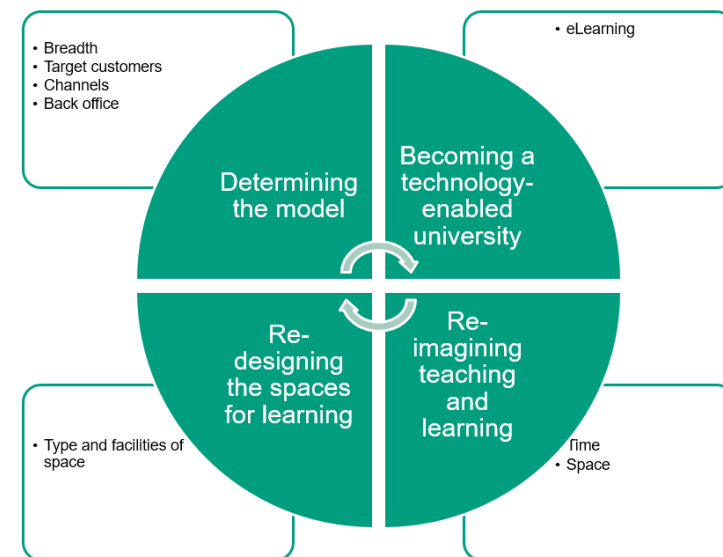
Потребности

- оптимизировать и / или реконфигурировать свою деятельность и базу активов
- включить новые механизмы преподавания и обучения
- определить новые каналы для выхода на рынок
- оценить ожидания заинтересованных сторон для усиления воздействия

The needs

- to streamline and/or reconfigure their operations and asset base,
- to incorporate new teaching and learning delivery mechanisms
- To identify new channels to market,
- To appreciate stakeholder expectations for increased impact

Как?



Тенденции в высшем образовании

Среднесрочная перспектива:

Увеличение открытых образовательных ресурсов и междисциплинарных исследований

Краткосрочная перспектива:

Измерение и перепроектирование учебных пространств

Долгосрочная перспектива:

Межведомственное сотрудничество и развитие культуры инноваций

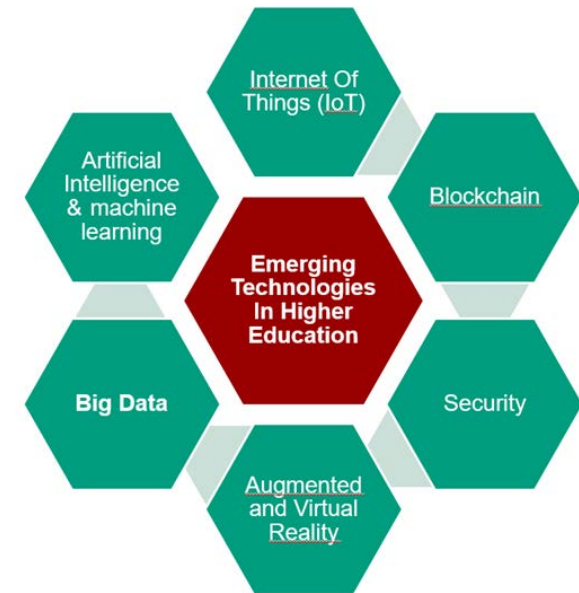
Short term: Measuring & redesigning learning spaces

Medium term: Increase in open educational resources & multidisciplinary studies

Long term: Cross-institution collaboration & advancing cultures of innovation



блокчейн – это непрерывная цепочка блоков. В ней содержатся все записи о сделках – хоть с луковицами тюльпанов в ботаническом саду. В отличие от обычных баз данных, изменить или удалить эти записи нельзя, можно только добавить новые.



Ссылки

- [https://itali.uq.edu.au/files/1267/Discussion-paper-Future trends in teaching and learning.pdf](https://itali.uq.edu.au/files/1267/Discussion-paper-Future_trends_in_teaching_and_learning.pdf)
- <https://www.ecampusnews.com/2019/02/20/latest-trends-higher-education/>
- <https://elearningindustry.com/digital-transformation-in-higher-education-8-top-trends>
- <https://er.educause.edu/blogs/sponsored/2019/11/7-technology-trends-in-higher-education>
- <https://www.mckinsey.com/industries/public-sector/our-insights/coronavirus-and-the-campus-how-can-us-higher-education-organize-to-respond>
- <https://eua.eu/downloads/content/ten%20european%20principles%20for%20the%20enhancement%20of%20learning%20and%20teaching16102017.pdf>



Диджитализация высшего образования

[Онлайн] системы управления обучением
(Learning Management System)
Онлайн инструменты активного обучения

Захар Малецкий, НУЕН

- [Онлайн] системы управления обучением (Learning Management System)
- Онлайн инструменты активного обучения

[Онлайн] системы управления
обучением (LMS)

Первая LMS

1990

FIRST LMS



FirstClass is released by SoftArc. Still working today, FirstClass has been recognized as the first real Learning Management System. The system runs on personal Macintosh computers, allowing access many home desktop users, not just mainframe users.

It also supports private email and public forums, allowing students to ask questions and clarify theory presented in learning modules. The United Kingdom's Open University uses FirstClass to deliver online learning across Europe.

Первая LMS в сети университета

1997



MySQL

The Interactive Learning Network is developed by CourseInfo. This is the first LMS to use a relational MySQL database. The Interactive Learning Network is installed at Yale, Cornell and other academic institutions.

SCORM 2004



2004

FIRST OPEN-SOURCE LMS RELEASED

2002

Универсальный формат

SCORM 2004 (Shareable Content Object Reference Model), a set of standards for training technology, becomes the basis for many current Learning Management Systems.

Первая «открытая» LMS



Moodle is released and remains one of the most popular open-source LMSs available online. Users need only download the software to their home PC to start learning.

2005

RISE OF FLASH VIDEO

Flash became an animation and authoring tool, which is crucial at creating multimedia content. Online Video is critical for implementing powerful multimedia and/or webcast functionality and making EdTech product more engaging.



2005

VIRTUALONDEMAND

Released by NACON Consulting, VirtualOnDemand was the first distance education system to allow users to train in software programs with only a web browser. Later, the US Army began using the system to train IT support personnel.



2008

MOBILE WEB

In 2008, mobile access to the internet exceeded desktop access for the first time. Businesses started looking towards creating a condensed "mobile" version of their websites.



Мобильное приложение

New mobile technology, such as hand-held based devices, is playing a large role in redefining how we receive information. This brings us to M-learning or mobile learning is the delivery of learning, education or learning support on mobile phones, PDAs or tablets.

2008

FIRST CLOUD BASED OPEN SOURCE LMS



Eucalyptus, the first cloud-based open source Learning Management System, is released. It stores information and runs entirely on the Internet, meaning that companies require no servers or internal networks to make use of it.

With this invention, courses can now be run without classrooms, with vastly reduced teaching staff and without the need for a supporting mainframe, requiring only that instructors, students and administrators log in from their home computer.

2012

SaaS LMS



Modern SaaS Learning Management Systems take advantage of cloud-based technology. Companies are freed from the burden of developing or installing in-house systems. Many LMS applications also support delivery to mobile devices using WiFi.

2013

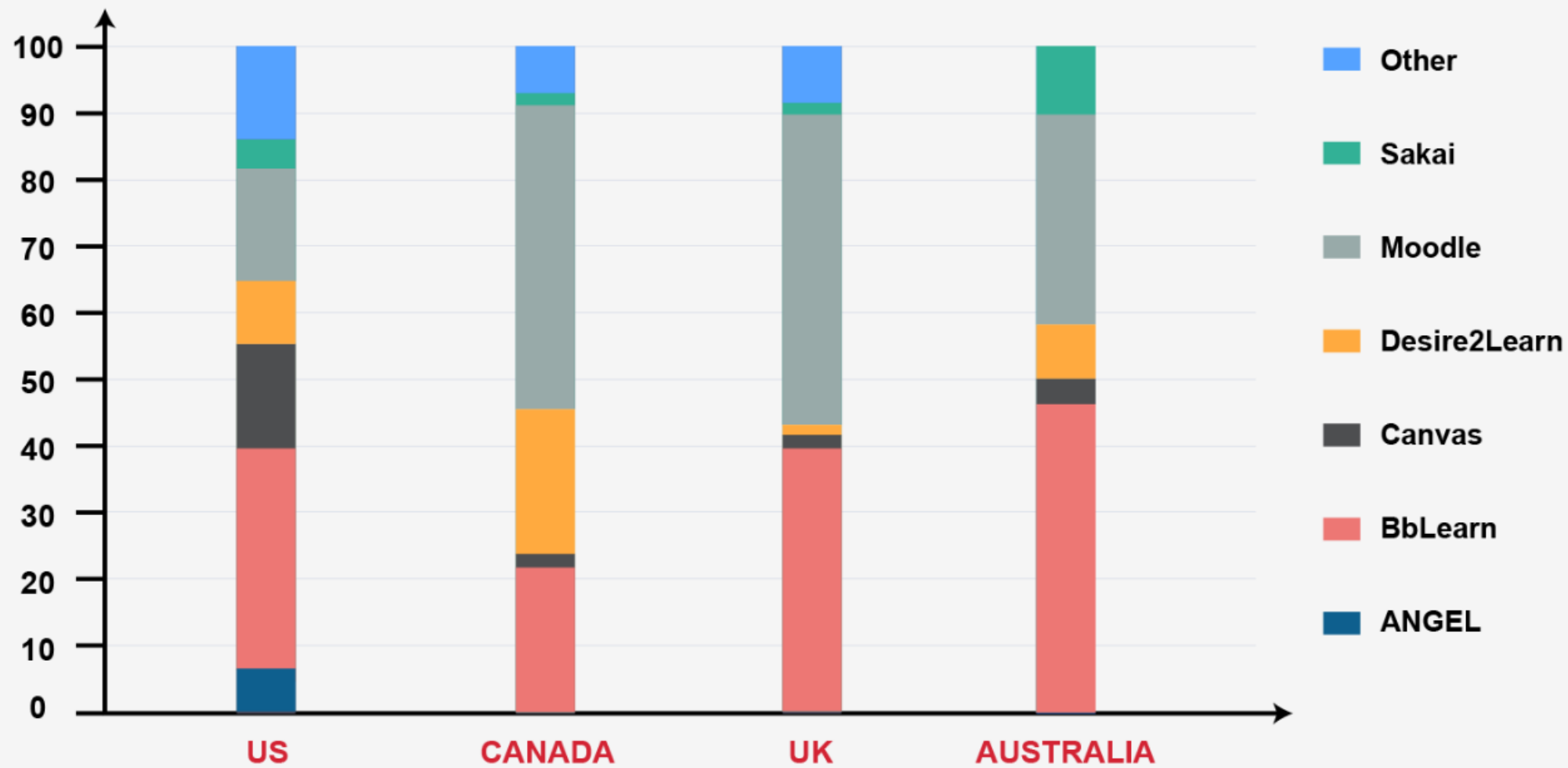
TIN CAN API



The Experience API (or Tin Can API), the next generation of SCORM, was released as version 1.0.0.

Новый универсальный формат

Крупные пользователи LMS



Эволюция LMS

EVOLUTION OF LMS

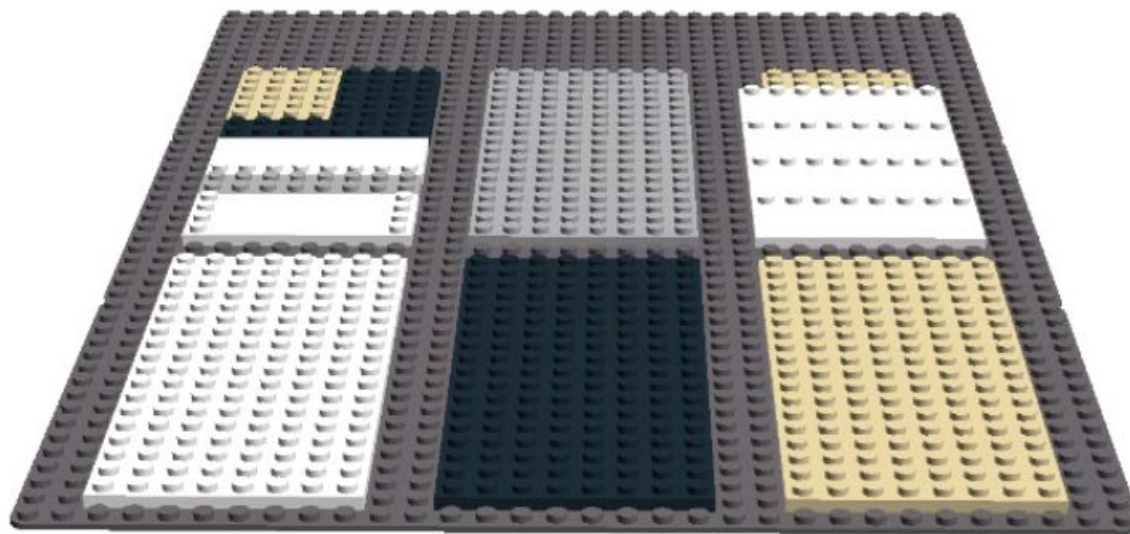


LMS – это больше чем онлайн
хранилище файлов (Dropbox и т.д.)

на примере Moodle



Moodle это платформа, на которой мы можем построить разные здания - **курсы**



Строительные материалы: **активности, ресурсы, модули, плагины, блоки, фильтры и т.д.**

Четыре базовых элемента



Хранение информации



Коммуникации



Оценивание



Совместная работа

Можно хранить...



Файлы:
тексты, картинки, аудио, видео



Веб-страницы



Папки



Ссылки



Базы данных



LMS объекты



Портфели
документов



Маркеры

Можно осуществлять КОММУНИКАЦИИ С ПОМОЩЬЮ...

Форумы



Личные сообщения



Групповой чат



Календарь



Диалоги

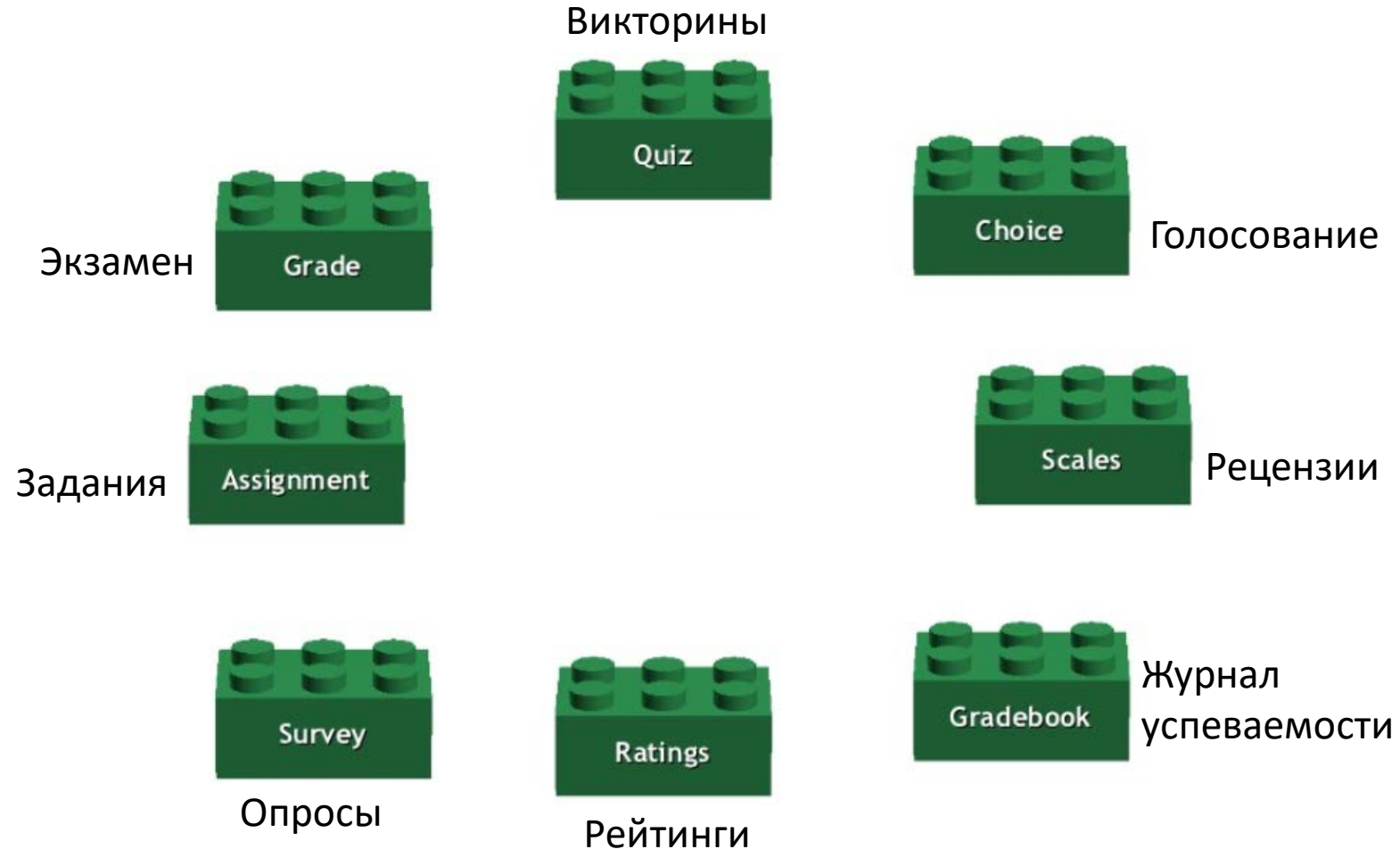


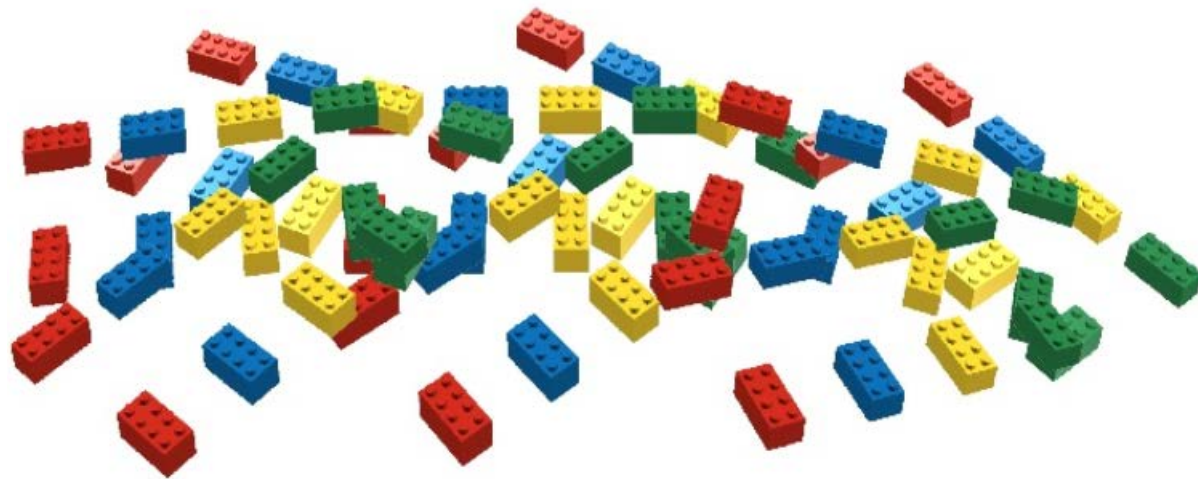
Подписки

Можно использовать для совместной работы...

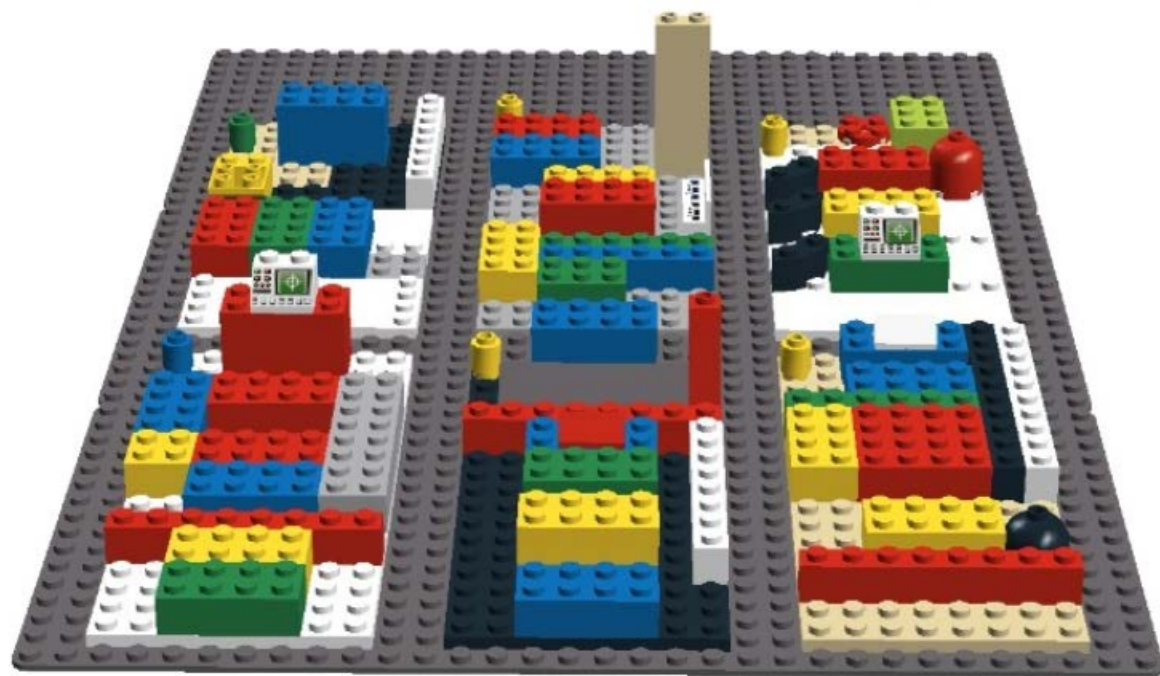


Можно проводить оценивание с помощью...





these plus nearly 400 other compatible modules, plugins, blocks, filters, activities...



Разные роли



Admin can do, see & edit anything on the site



Teacher can do, see & edit anything in their course



Student can do, see & edit in course as assigned by teacher



Guest can only look in to parts allowed

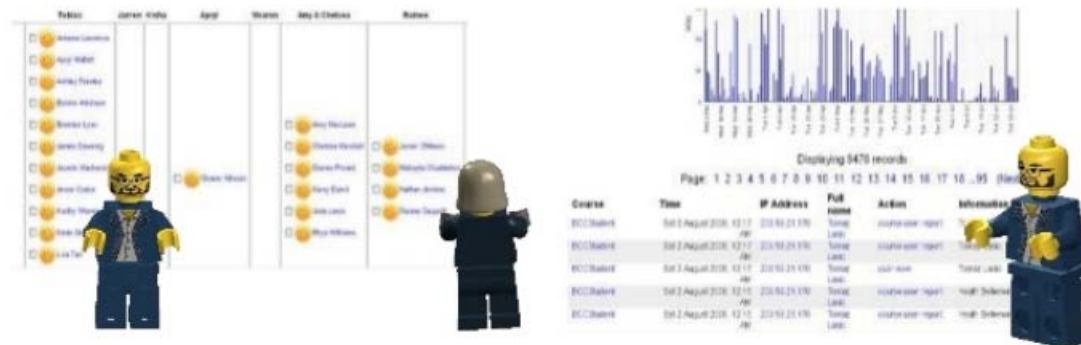


Permissions for **parent** or any **other** role can be specified...

We can easily watch what others do...



...and control as much or as little as we want.

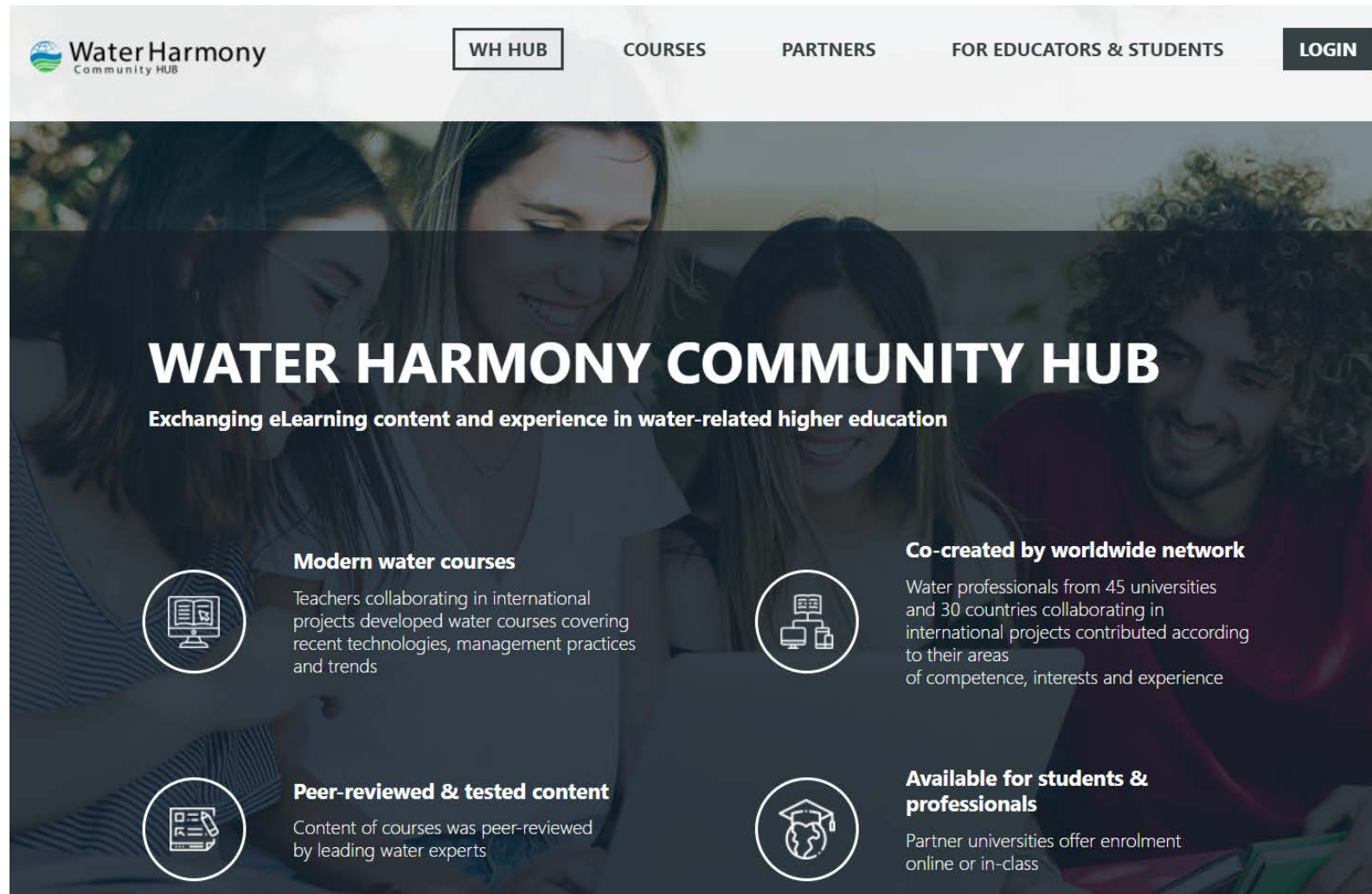


- Гибкая платформа – может работать на
 - Одном компьютере
 - Сервере
 - На внешнем хостинге

Бесплатно

Как начать?

www.eduwater.net

The image shows the header and main content area of the Water Harmony Community HUB website. The header is a light gray bar with the Water Harmony logo on the left, followed by navigation links: 'WH HUB' (highlighted with a black border), 'COURSES', 'PARTNERS', 'FOR EDUCATORS & STUDENTS', and a 'LOGIN' button on the right. The main content area has a dark background with a photo of four students looking at a laptop. The title 'WATER HARMONY COMMUNITY HUB' is in large white letters, with the subtitle 'Exchanging eLearning content and experience in water-related higher education' below it. Four feature boxes are arranged in a 2x2 grid, each with an icon in a circle and a title in bold. The features are: 'Modern water courses' (computer icon), 'Co-created by worldwide network' (network icon), 'Peer-reviewed & tested content' (document icon), and 'Available for students & professionals' (graduation cap icon).

Water Harmony
Community HUB

WH HUB COURSES PARTNERS FOR EDUCATORS & STUDENTS LOGIN

WATER HARMONY COMMUNITY HUB

Exchanging eLearning content and experience in water-related higher education



Modern water courses

Teachers collaborating in international projects developed water courses covering recent technologies, management practices and trends



Co-created by worldwide network

Water professionals from 45 universities and 30 countries collaborating in international projects contributed according to their areas of competence, interests and experience



Peer-reviewed & tested content

Content of courses was peer-reviewed by leading water experts



Available for students & professionals

Partner universities offer enrolment online or in-class

www.eduwater.net

Search for Partner

Group

Any

Network

Any

AAU - Addis Ababa University

Acsa Obras E Infraestructuras-Sorigué

Asker municipality

AUTH - Aristotle University of Thessaloniki

BGU - Ben Gurion University

BOKU - University of Natural Resources and Life Sciences

BSTU - Belarusian State Technological University

BUET - Bangladesh University of



A world map with a light pink background and dark blue landmasses. Numerous small, semi-transparent colored squares (yellow, green, red, blue) are placed on the map to indicate the locations of partner institutions. The markers are most densely clustered in Europe and North America, with more scattered markers in Africa, Asia, and Australia. A zoom control with '+' and '-' buttons is located in the top right corner of the map area.

www.eduwater.net

EDUCATORS



Search courses and view content



Download course files



Import to your university eLearning platform



Use as e-course or in-class

START



Water Supply



Water Resource
Management



Industrial Water
Management



Wastewater Treatment
&
Engineering



Innovation
&
Entrepreneurship

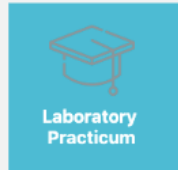


Academic
Writing



Laboratory
Practicum

Explore more



Laboratory practicum

The laboratory practicum course is developed to improve the effectiveness of laboratory knowledge and skills in the water field and to learn the standard methods for evaluation of water quality indicators.

Course content

This course contains practical and theoretical lessons.

[More →](#)

[Download](#)



Industrial Water Management

Industrial wastewater is a by-product of industrial processes, and is separate from domestic sources of wastewater. Usually, the industrial wastewater has different origin and more toxic. The treatment of industrial wastewater is more complex due to using different physical-chemical treatment methods. This course provides basic principles of industrial water management, toxicity, sludge management. The Industrial Water Management course, offered by the water and wastewater management experts of Water Harmony project, will give you a unique opportunity to get the access to the essential knowledge of wastewater treatment field.

Course content

This course contains **10 lessons** treatment and management in industry

[Download](#)

www.eduwater.net

Laboratory practicum

TOC

- LearningModules
 - Laboratory Practicum - pres...
 - Lecture 1 - Quantitative an...
 - Lecture 2 - The determinati...
 - Lecture 3 - Determination ...
 - Lecture 4 - Coagulation.pdf
 - Lecture 5 - Filtration.pdf
 - Lecture 6 - THE DYNAMIC ...
 - Lecture 7 - EVALUATION O...
 - Lecture 8 - EVALUATION O...
- Manuals Exercises
 - Adsorption lab manual.Ma...
 - Lab course - The dynamic ...
 - Lab course - Coagulation...
 - Lab course - Filtraton.Man...
 - Lab course -Microscopy of ...
 - Quantitative analysis. Spec...
 - Lab course -UF_RO_NF

Lecture 1 - Quantitative analysis. Spectrophotometric deter... 1 / 9

 Water Harmony Erasmus+ 

Quantitative analysis. Spectrophotometric determination of Fe(III) ions in ground water

University of Warmia and Mazury, Olsztyn

 **WATER HARMONY ERASMUS +** 

Harmonise teaching and pedagogical approaches in water related graduate education

- 15 минут перерыв
- До 10:45

Онлайн инструменты активного обучения

Инструменты

- Взаимодействия с аудиторией
- Игрового обучения (gamification)
- Углублённой обратной связи
- Креативного взаимодействия
- Мозгового штурма

Взаимодействие с аудиторией

www.sli.do

- В процессе аудиторных или онлайн лекций
 - Задавать вопросы
 - Проводить опросы
 - Викторины
 - Анализ обратной связи
 - Мозговой штурм

Подключитесь через сайт

www.slido.com

#wh2

Игровое обучение

www.kahoot.it

- Мобилизация аудитории / привлечение внимания
- Экспресс проверка знаний
- Снятие напряжения / расслабление внимание между блоками сложного материала или в перерывах

Углублённая обратная связь

www.mentimeter.com

- Системные опросы
- Гибкие типы вопросов
- Экспорт и сохранение результатов для анализа

Креативное взаимодействие

www.padlet.com

padlet

Zakhar Maletskiy + 12 • 11mo

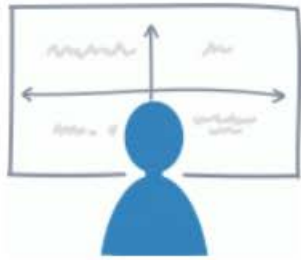
Dissemination activities

Please suggest dissemination activities relevant to each target group

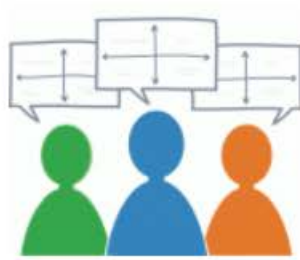
General Public	Research & Innovation	Business/end-users	Public Bodies
Zakhar Maletskiy 1yr Project webpage with sections containing popular information about research projects 8/10 (1) Add comment	Anonymous 1yr Papers in peer-reviewed journals from Q1 Vitaly GRADE Add comment	Harsha Ratnaweera 1yr Present in seminars/Conferences of the branch GRADE Add comment	Anonymous 1yr Special session on International conference organized by IWA/EWA Vitaly Gitis GRADE Add comment
Harsha Ratnaweera 1yr Popular-scientific publications/newspaper articles GRADE Add comment	Anonymous 1yr Seminar/conference towards the end of the project GRADE Add comment	Anonymous 1yr Present in some exhibitions of the sector Beatriz (ACSA) GRADE Add comment	Anonymous 1yr Present tools/concepts to consultancies that work closely with/sell innovation to municipalities (Dino - NMBU) GRADE Add comment
Anonymous 1yr Newsletters organized through the website, ie. people reaching out to subscribe to	Anonymous 1yr S GRADE	Anonymous 1yr Involvement in fairs, workshops and exhibitions	Anonymous 1yr

Мозговой штурм

www.groupmap.com



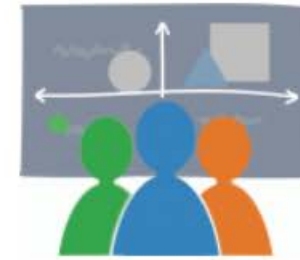
1. Design your activity



2. Invite participants



3. Capture responses



4. View results in real-time

Источники

Tomaz Lasic

<http://human.edublogs.org>



moodlefam@gmail.com

Twitter 'lasic'