Quality & openness - open academic e-textbook for STEM

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Challenges in HE in Poland

- Curriculum (NQF)
- Resources
- Technology
Challenges in HE in Poland - curriculum

adjustment of teaching to the requirements of the job market and education for the future (NQF)

NQF requires up-to-date educational materials to be provided (too expensive for students)
Challenges in HE in Poland - resources

students use materials available online (questionable quality)

lack of high quality materials for teachers to prepare education resources/OER
Challenges in HE in Poland - ICT skills

Digital School programm (ICT skills equipped learners become students)

unlimited access to the content

easy use and adaptation
Mission - openness

Our mission is to create effective mechanisms for opening educational materials, e-textbooks and other educational resources developed by academic teachers at AGH.
Openness = access

for everyone
no fees and login/password required
to high quality resources
for users with special learning needs
to the source of material for adaptation (open formats)
to open tools enhancing learning process
Opennes at AGH - how did we start

2010
OER repository

2013
Open academic e-textbooks
OER study of the academic community (2013)

2,682 academic teachers (the complete response rate of 25%)

46% declared recognition of the idea of OER

35% presented fully formed attitude towards OER

5% of academic teachers were not able to assess their knowledge
40% of respondents recognised it
21% browsed materials published there
only 4% used the materials for educational purposes

13% had experience in publishing and sharing their educational resources on the Internet

only 2% have published own materials in Open AGH repository.
OER study (2013) - quality

60% recognise the potential of the quality of OER

- improving the quality of teaching materials
- improving the quality of classes
- improving development of better curricula
Variety of formats
Closed formats
Difficulties with adaptation
Out-of-dated
open source platform
(for development, publishing, use)

open content for modules & e-textbooks
(NQF physics and maths)
tools analysis
result
assumptions for the tool

content analysis
results
matrix of subjects vs faculties’ curricula

project & implementation
result
tool for content development

development of the content
results:
modular content: physics, maths, methodological assumptions

e-textbooks repository
rezultat
e-textbooks: physics, maths - AGH curriculum

re-use of e-textbook
result
adapted e-textbooks

MAY 2013 - work started
1st pilot modules for physics
Open AGH e-textbooks - modularity
Open AGH e-textbooks – target group

Creators of core content
- subject coordinator
- author
- reviewer
- editor

Users of content
- academic teacher
- student
- teacher
- school student
- learner
- everyone
From module to e-textbook

Coordinator
- Create module
  - Assign module to author
    - Write the module
    - Write the review of the module
    - Correct the module
    - Accepts the module for publication
    - Publish the module
      - Create e-textbook from the modules
        - Publish e-textbook

Author
- Write the module

Reviewer
- Write the review of the module

Editor
- Correct the module
Working on the content

Online editor (TikiWiki)

Import from LaTeX (plug-in LaTeX2Wiki)

Review and editor’s correction process
Edytuj: Praca wykonana przez siłę stałą

W najprostszym przypadku, punkt materiałny przemieszcza się pod wpływem stałej siły $F$. Traktując przesunięcie $s$ jako wektor o długości równej drodze jaką przebywa ten punkt i kierunku zgodnym z kierunkiem ruchu, możemy zdefiniować pracę $W$.

Definicja 1:

Praca $W$ wykonana przez siłę stałą $F$ jest iloczynem skalarnym tej siły $F$ i wektora przesunięcia $s$, tzn. $W = \langle F \cdot s \rangle = F \cdot s \cdot \cos \alpha$.

Przykład 1:

Gdało o masie $m$ (na przykład sanki) jest ciągnięte po poziomej powierzchni stałą siłą $F$ (rysunek poniżej), a sznurek, za który ciągniemy tworzy kąt $\alpha$ z poziomem.
List of modules - result of author’s work

<table>
<thead>
<tr>
<th>Module Description</th>
<th>Status</th>
<th>Comment</th>
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</thead>
<tbody>
<tr>
<td>Amplituda i faza w ruchu harmonicznym wymuszonym</td>
<td>Publikuj</td>
<td>Gotowy do publikacji</td>
</tr>
<tr>
<td>Ciało sztywne i moment bezwładności</td>
<td>Oczekujący na recenzję</td>
<td></td>
</tr>
<tr>
<td>Ciekawe przykłady ruchu obrotowego</td>
<td>Publikuj</td>
<td>Gotowy do publikacji</td>
</tr>
<tr>
<td>Ciężar</td>
<td></td>
<td>W trakcie pisania</td>
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<tr>
<td>Doświadczenie Cavendisha</td>
<td></td>
<td>W trakcie pisania</td>
</tr>
<tr>
<td>Organia wymuszone i rezonans</td>
<td></td>
<td>Szczotka</td>
</tr>
<tr>
<td>Dynamika ruchu obrotowego</td>
<td></td>
<td>Oczekujący na recenzję</td>
</tr>
<tr>
<td>Energia ruchu harmonicznego</td>
<td></td>
<td>Szczotka</td>
</tr>
</tbody>
</table>
Building e-textbooks from modules

academic teacher/
responsible for the subject
Building e-textbooks from modules

AGH Curriculum based on NQF (curriculum of other universities from Poland)

academic teacher/responsible for the subject
Exemplary e-textbook

Fizyka

WYDZIAŁ: WFIS
KIERUNEK: Fizyka Medyczna
SEMESTR: 2
AUTOR:

MECHANIKA I FIZYKA STATYSTYCZNA

Ruch obrotowy
- Ciało sztywne i moment bezwładności
- Ciekawe przykłady ruchu obrotowego
- Dynamika ruchu obrotowego
- Kinematyka ruchu obrotowego
- Moment pędu (przeniesiony)
- Obliczanie momentu bezwładności
- Ruch obrotowo-postępowy
- Ruch precesyjny bąka
- Ruch przyspieszony po okręgu
- Zasada zachowania momentu pędu
Flexibility of e-textbook use and adaptation

PDF, DjVu

ePUB, MOBI, AZW3
Flexibility of e-textbook use and adaptation

PDF, DjVu

ePUB, MOBI, AZW3

ODT, LaTeX
Flexibility of e-textbook use
Flexibility of e-textbook use
Open AGH e-textbooks

- use published e-textbooks
- adapt published e-textbooks
- create your own e-textbooks
- share (published/own) e-textbooks
Open academic e-textbooks

Creative Commons Attribution - Share Alike 3.0 Poland
Benefits from CC BY-SA

adapted and modified e-textbooks will be always available for all users as well for the authors of the original works (AGH)

high quality resources are good starting point for adaptation = more open good quality resources available (CC -> SA)

constant up-to-date e-textbook according to AGH Curriculum

protection from use by commercial publishers
Metadata standards

Learning Resources Metadata Initiative
Dublin Core Metadata Initiative

OAI-PMH for sharing metadata with other universities' libraries (catalogue, digital libraries)
Open academic e-textbooks AGH

created by the AGH community
for the whole academic community
Open AGH e-textbooks - outcomes
Open AGH e-textbooks - outcomes

open source platform for developing, publication and use
Open AGH e-textbooks - outcomes

- open source platform for developing, publication and use
- open modules and e-textbooks + archive in Univ. Library catalogue
Open AGH e-textbooks - outcomes

- Open source platform for developing, publication and use
- Open modules and e-textbooks + archive in Univ. Library catalogue
- University Curriculum plug-in
Open AGH e-textbooks - outcomes

- open source platform for developing, publication and use
- open modules and e-textbooks + archive in Univ. Library catalogue
- University Curriculum plug-in
- increase of IPR awareness among academic community
First pilot open e-textbooks - academic year 2014/2015
http://epodreczniki.open.agh.edu.pl
(early beta version)

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