Personalized Teaching and Learning in the Science Classroom

2019 Moodle extended!
Main Goals

Provide Teachers with tools to Personalize teaching for their Students

Increase Collaboration between teachers in Israel
PeTeL leans on the Department of Science Teaching infrastructure, knowledge and experience.
Supportive infrastructure: LMS & PLC

Development of infrastructures

- Developing LMS-based digital environments
- Development, adaptation and accessibility of research based contents
- Diagnostic tools
- Broad range of resources for personalized teaching and learning

Design based research & implementation

- Communal frameworks for teachers (teachers' communities, leading teachers)
- Personal teaching sequences
Personal Teaching area for Teachers and their students

Interactive Resources

Personalization Options
- 35%
- 65%

Data Based Teaching

Personal Teaching Sequence

Question

Activity A

Activity B
Sharing Frameworks

Peer Environment

Lihi Goldshmidth
Content Shared: 4
Peers: 65
Followers: 14

Asaf Bar Yosef
Content Shared: 67
Peers: 32
Followers: 58

Arik Gilboa
Content Shared: 25
Peers: 12
Followers: 56

Copy
Review
Share
Send

Lihi Goldshmidth | 11th Grade
Waves

Asaf Bar Yosef | 12th Grade
Electricity

Arik Gilboa | 10th Grade
Mechanics

Asaf Bar Yosef | 10th Grade
Mechanics

Personal Teaching area for Teachers and their students
Teacher social network
Teacher social OER sharing profile
Content Conversion
interactive versions offering personalization options and Data Based Teaching

~200 Interactive Activities
~150 Diagnostic Questions

Uploads to Repository

Mechanics E&M Rest of Syllabus

teachers Weizmann
Leading team  

Year 1  
2016  

Academic Faculty  

Technology Experts  

Leading Teachers
Implementation model - Physics

Year 2
2017

leading team
2 Researchers
3 leading teachers
4 technology experts

Activation group
30 teachers

Students
1500 High School students
Current Status - Physics

**Year 3**
2018

**leading team**
- 4 Researchers
- 5 leading teachers
- 7 technology experts

**Mentors group**
- 15 teachers

**Nationwide Workshops**

100 teachers*

3500 students

*50% of teachers from Israel's Periphery, 10% Arab
Year 3 2018

- Nationwide Workshops
- Leading team
  - 4 Researchers
  - 5 leading teachers
  - 7 technology experts
- Mentors group
  - 15 teachers
- 100 teachers*
- 3500 students

- 60 min/week
- 150 min/week
- 2.5 login/week
- 4.8 login/week
- 58% In school
- 63% In school
PeTeL’s Professional Development model
Analyzing Courses and Clickstream

Teacher’s Practices
- Interactive Learning
- Diagnostic Teaching
- Assignment Submission
- Sequenced Drive

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher 1</td>
<td><img src="image1.png" alt="Pie Chart" /></td>
<td><img src="image2.png" alt="Pie Chart" /></td>
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<tr>
<td>Teacher 2</td>
<td><img src="image3.png" alt="Pie Chart" /></td>
<td><img src="image4.png" alt="Pie Chart" /></td>
</tr>
</tbody>
</table>

Teacher’s roles
- Executor
- Designer
- Producer
Web 2.0 Platform

Encouraging content creation and sharing

Big data

Personalization
Personalization in PeTeL

Expert Knowledge

Students data

Social Network data
提供建议申请活动

问题1：

选择A或B，你更倾向于哪个？

- A
- B

选择A的有61%；选择B的有26%。选择是否基于以下原因：

- 选择A的人可能更倾向于尝试新事物。
- 选择B的人可能更倾向于保持现状。

选择A的理由：

- 喜欢冒险。
- 更喜欢尝试新事物。

选择B的理由：

- 喜欢稳定。
- 习惯于现有模式。

选择A或B？

- 是选择A的。
- 是选择B的。
Open & shared
OER catalog
OER catalog
Duplicate course

Allow a teacher an independent way of duplicating a course at the end of the year, preparing for the new year...
Content oriented
Social network
(for teachers)
Social gamification

Motivate teachers to **contribute** OERs to the public repository.

Motivate teachers to **help** each other.
Collaboration
In small teams
Student submitting Assignments in teams
<table>
<thead>
<tr>
<th>ID</th>
<th>First name</th>
<th>Status</th>
<th>Grade</th>
<th>Last modified (submission)</th>
<th>File submissions</th>
<th>Assessed PDF</th>
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<tbody>
<tr>
<td>1</td>
<td>John</td>
<td>Submitted for grading</td>
<td>Grade</td>
<td>Thursday, 4 April 2019, 6:57 PM</td>
<td>2 files</td>
<td></td>
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<tr>
<td>2</td>
<td>Jane</td>
<td>Submitted for grading</td>
<td>Grade</td>
<td>Thursday, 4 April 2019, 6:57 PM</td>
<td>1 file</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Mike</td>
<td>Submitted for grading</td>
<td>Grade</td>
<td>Thursday, 4 April 2019, 6:57 PM</td>
<td>1 file</td>
<td></td>
</tr>
</tbody>
</table>

Assignment: Languages of Love
Easy onboarding

For novice teachers
Activity chooser

- Big icons
- Custom roles
  - Teacher
  - Advanced teacher - more activities

The external tool activity module enables students to interact with learning resources and activities on other websites. For example, an external tool could provide access to a new activity type or learning materials from a publisher.

To create an external tool activity, a tool provider which supports LTI (Learning Tools Interoperability) is required. A teacher can create an external tool activity or make use of a tool configured by the site administrator.

External tool activities differ from URL resources in a few ways:

- External tools are context aware i.e. they have access to information about the user who launched the tool, such as institution, course and name
- External tools support reading, updating, and deleting grades associated with the activity instance
- External tool configurations create a trust relationship
Quiz presets

Initiate a quiz, for novice teachers with no Moodle experience
Quiz presets

Quick initiating a quiz, for teachers with no Moodle experience

⭐ Show only **relevant** settings
⭐ Allow **advanced mode**

**Part C: Calculating the size of the magnetic force around a current-carrying wire in a magnetic field**

There are required fields in this form marked ⭐.
Quiz report:

“After party”

Charts used to get an overview on student’s performance

And also to filter the students on the table.

Actions: Send message, add to group, close attempt, ...
Competency based teaching and learning
Question level competencies
### Quiz report: failed competencies

#### Dashboard → Manage reports → Failed competencies

<table>
<thead>
<tr>
<th>student</th>
<th>question no/title</th>
<th>question text</th>
<th>competency id</th>
<th>competency</th>
<th>status</th>
<th>suggested oer</th>
<th>send message</th>
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<tbody>
<tr>
<td></td>
<td>1.</td>
<td>באיזו שיטהomedא משתמשים באמצעות programs שימורים?!</td>
<td>9.12</td>
<td>ضعيف</td>
<td>Failed</td>
<td>OERs with related competency</td>
<td>Send Message</td>
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<td>2.</td>
<td>באיזו שיטהomedא משתמשים באמצעות programs שימורים?!</td>
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<td>באיזו שיטהomedא משתמשים attravers programs שימורים?!</td>
<td>9.12</td>
<td>ضعيف</td>
<td>Failed</td>
<td>OERs with related competency</td>
<td>Send Message</td>
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<tr>
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<td>4.</td>
<td>באיזו שיטהomedא משתמשים attravers programs שימורים?!</td>
<td>9.12</td>
<td>ضعيف</td>
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<td>5.</td>
<td>באיזו שיטהomedא משתמשים attravers programs שימורים?!</td>
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Showing 1 to 6 of 6 entries

Add to group
Video annotation

Teachers and students discuss issues on top of video timeline
Personalization, based on profile analytics and research
Profiling teachers

To allow better recommendation of relevant OERs from the public OER catalog, that are tailored to teacher profiles which will help students failing achieving competencies match relevant activities.
Teacher course

OER public catalog

Personalization, based on profile analytics and research
Progress overview & Teach support
Quick overview

Allow the **teachers** to see status of submissions.

And allow **students** see due submission and returned grades & feedback.
Direct teacher support

- Bugs
- Content errors
- Pedagogical questions

Automatic redirect to relevant help-desk representative