KTU E-Learning Technology Centres EXPERIENCE in

Learning Analytics Tools, Technologies, Applications

**Multiplier Event: We-Collab Project
Rijeka University, Croatia
9th December, 2024**

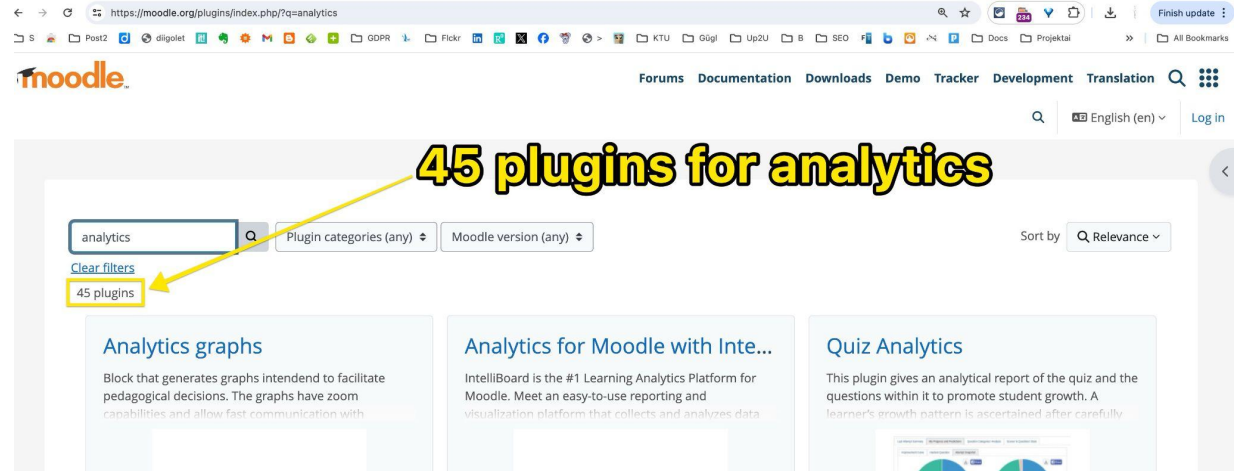Gytis Cibulskis, Ausra Urbaityte

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Learning Analytics

Learning analytics (LA) is the measurement, collection, analysis and reporting of data about learners in their context, for purposes of understanding and optimizing

- *learning*
- ***the environment in which it occurs***

Analytics in MOODLE

- Native MOODLE Reporting functionality:
  - System level reports
  - Course level reports
  - Custom reports
- Native Machine Learning (ML) based Learning Analytics
- Different plugins and integrations

Reports
Course overview

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KTU Open Courses

General   Users   Courses   Grades   Plugins   Appearance   Server   **Reports**   Development

Report type

✓ Most active courses
Most active courses (weighted)
Most participatory courses (enrolments)
Most participatory courses (posts/views)

Time period – last:

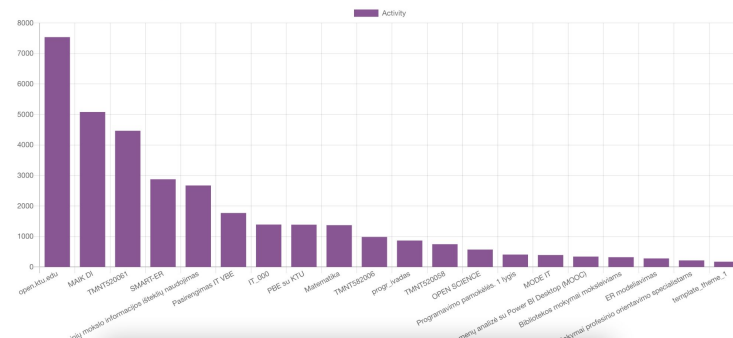✓ 1 weeks
2 weeks
3 weeks
4 weeks
2 months
3 months
4 months
5 months
6 months
7 months
8 months
9 months
10 months
11 months
Last year
2 years
3 years
4 years

20   View

Most active courses

Open >>

Native MOODLE report builder

MOODLE ML Analytics Tools

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Existing analytics models:

New model ⌄

Analytics models

Model name	Enabled	Indicators	Analysis interval	Insights	Actions
Courses at risk of not starting ✏️ \core_course\analytics\target\no_teaching ❓	No	Number of indicators: 2	From start to end ❓	Disabled model	Actions ⌄
Students at risk of dropping out ✏️ \core_course\analytics\target\course_dropout ❓	No	Number of indicators: 49	Not yet defined ❓	Disabled model	Actions ⌄
Students who have not accessed the course recently ✏️ \core_course\analytics\target\no_recent_accesses ❓	No	Number of indicators: 1	Past month ❓	Disabled model	Actions ⌄
Students who have not accessed the course yet ✏️ \core_course\analytics\target\no_access_since_course_start ❓	✔	Number of indicators: 1	One month after start ❓	No insights reported	Actions ⌄
Upcoming activities due ✏️ \core_user\analytics\target\upcoming_activities_due ❓	No	Number of indicators: 1	Upcoming week ❓	Disabled model	Actions ⌄

MOODLE Analytics Tools

Create New model

- Target
  - *Students at risk of not achieving the competencies assigned to a course*
  - *Students at risk of not meeting the course completion conditions*
  - *Students at risk of dropping out*
  - *Students at risk of not achieving the minimum grade to pass the course*
- Multiple indicators (predictors)
- Analysis interval
  Past 3 day / month/ week; last tenth; upcoming 3 day / month/week, no time limit, ….)
- Contexts (Selected course or category)
- Predictions processor

MOODLE Analytics Tools

Analytics Models example:

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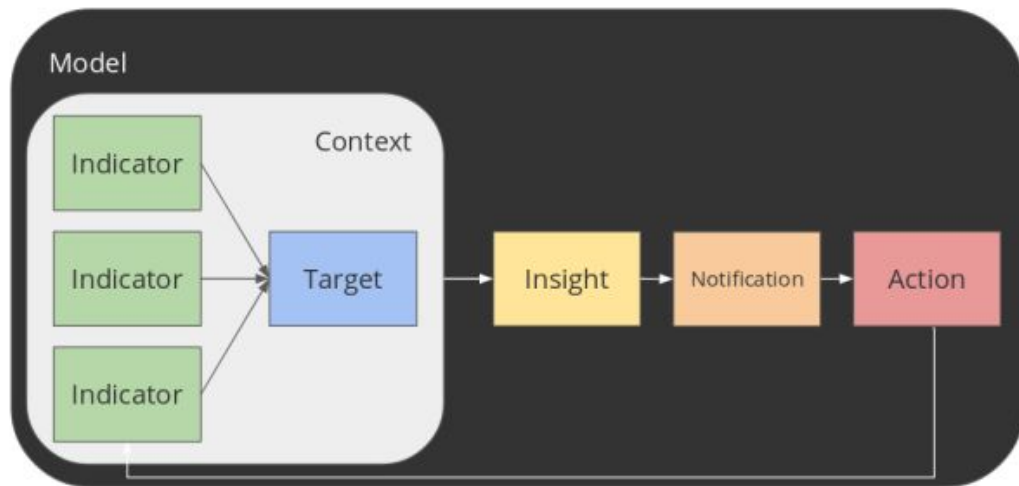
Actions executed by users for "Students who have not accessed the course yet" model

Actions executed by users

- 🟡 View details
- 🟣 Outline report
- 🟠 Send message
- 🔵 Accept
- 🔴 Not applicable
- ◻️ Incorrectly flagged

Grouped actions

🟣 Actions

1.0		
0.9		
0.8		
0.7		
0.6		
0.5		
0.4		
0.3		
0.2		
0.1		
0		
Useful	Neutral	Not useful
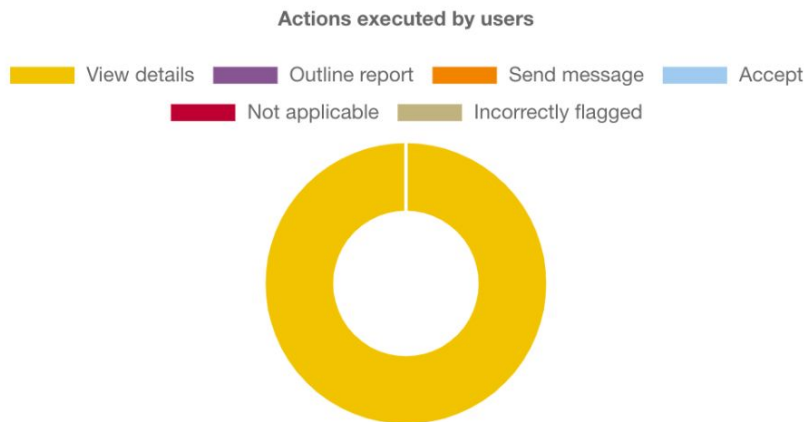
Show chart data

Show chart data

MOODLE Analytics Tools
Analytics Models example:

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Students at risk of not meeting the course completion conditions prediction

Name	Actions
Jamaal Alonzo	Actions ▾

- 💬 Send message
- 📈 Outline report
- ✔ Acknowledged
- 🗑 Not useful

Prediction details

Time predicted	Monday, 8 April 2019, 9:01 AM
Time range	Friday, 1 March 2019, 6:29 AM to Monday, 1 April 2019, 8:19 AM

Indicator	Calculated value
Course accessed after end date	⚠ No
Course accessed before start date	⚠ No
Any write action	⚠ No
Any write action in the course	⚠ No
Read actions amount	⚠ 0%

Different plugins from MOODLE repository

Some plugins are developed for integrating with 3rd party systems such as
Google Analytics, Intelliboard, etc.

MOODLE Analytics Tools

Quiz attempts + Profile info (school, class or group, etc.)

LA Plugins for Moodle

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Learning Analytics

(local_learning_analytics)

- For Teachers and Students
- Usage activities

Learning Analytics Dashboard ❓
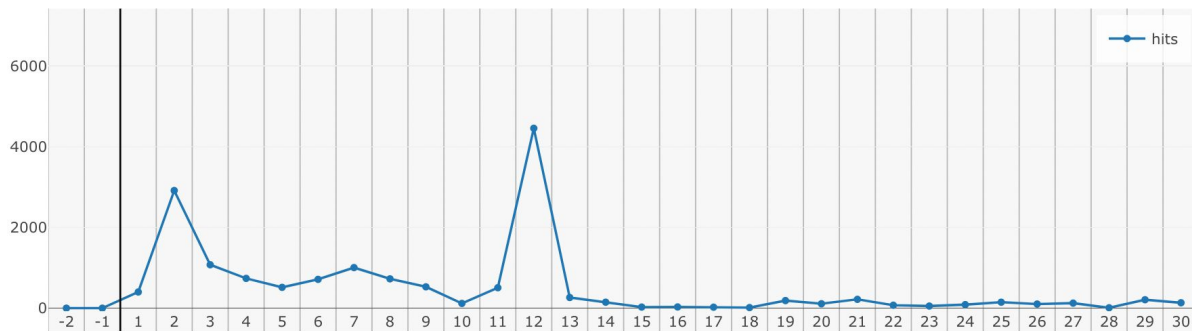
Participants	**Hits**	**Quizzes & Assignments**	**Most used activities**
Total	Last 7 days	Attempts and submissions (last 7 d...	Last 7 days
1250	**68**	**0**	Klausimai su ats... 5 hits
	▼ -178		Užduočių sąlygo... 4 hits
No change		No change	Užduočių sąlygo... 4 hits

LA Plugins for Moodle

WE-COLLAB

Learning Analytics (local_learning_analytics)

Quizzes and Assignments

This page shows statistics regarding quizzes and assignments in the course.

Quizzes

Quiz	Participants	Attempts	Overall average of all attempts	Overall average of first attempts
Bandomojo egzamino užduotis	265	272	27.4%	32.7%

Assignments

Assignment	Graded submissions	Overall average of all attempts
2014 m. IT VBE 1 programavimo užduoties sprendimų įkėlimas (nebūtinai)	0	0.0%
Savarankiško darbo užduočių įkėlimas	0	0.0%
Savarankiško darbo užduočių įkėlimas	0	0.0%

Activities and Resources

Filter by activity name: [ ] Filter

The above figure shows the hits per activity. The order is based on the order of the activities in the course. The table below breaks down the hits by activity type. A click on the respective activity type limits the view to activities of the corresponding type. The table below shows the most frequently used activities in the course.

Activity type	Hits
Quiz	15837
Folder	14972
URL	9507
File	6653
Forum	685
Assignment	269

Most used activities

Activity	Activity type	Section	Hits
Bandomojo egzamino užduotis	Quiz	Bandomasis 2021 m. IT VBE	15837
Saugus ir teisėtas naudojimasis informacija bei e.paslaugomis	File	Saugus ir teisėtas informacijos ir interneto naudojimas	1002
Pasitikrinkite, treniruokitės. Testas su grįžtamuoju ryšiu	URL	Saugus ir teisėtas informacijos ir interneto naudojimas	999

Open >>

LA Plugins for Moodle

Course Usage Statistics

(https://moodle.org/plugins/report_coursestats)
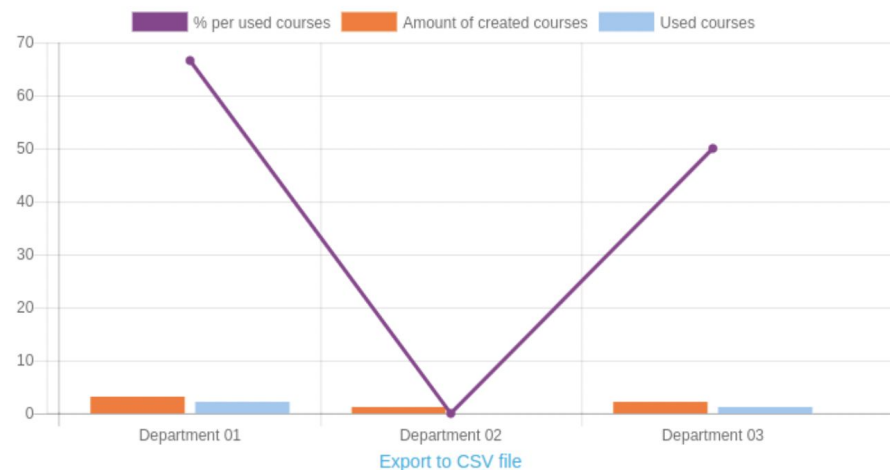
Category	Amount of created courses	Used courses	% per used courses
All categories	6	3	50.00%
Department 01	3	2	66.67%
Department 02	1	0	0.00%
Department 03	2	1	50.00%

Local / Custom Plugin
Progress report

- For teacher and administrator
- Time spent in course
- Average grade
- Students enrolled
- Attendance
  (showing attendance session of the course, showing enrolled and absent students)
- The notification to the parents and administrator
- Notification about grade and attendance
  - Get grade
  - Absent students
  - Absent two time

1 Users **2** Courses

∨ **Progress report**

Select the parameters for your search

Start:	14 ⇕	November ⇕	2022 ⇕	23 ⇕	46 ⇕ 📅
End:	28 ⇕	November ⇕	2022 ⇕	23 ⇕	46 ⇕ 📅

3

Time between activity (minutes): 45 ⇕

Sort by: Name (A-Z) ⇕

Filter by column: ⇕

Filter value: **4**

Search

Local / Custom Plugin
Progress report

Example

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Users | Courses

› **Progress report**

Search

Showing all enrolled students and their activity during the selected period.
Click on any user's name to see their detailed activity in courses.
Click on 'Profile' to see a user's Moodle profile.

Name	Time spent in course	Average grade	Absent sessions / Total sessions	Moodle profile
25 MantvisMK	10 mins 56 secs	50	1 / 2	
Abečiūnas Domas	24 mins 55 secs	66.67	1 / 2	
Abečiūnas Matas	24 mins 3 secs	70	1 / 2	
Abramovas Ernestas	17 mins 44 secs	66.67	1 / 2	
Abromaitytė Ugnė	27 mins 23 secs	70	1 / 2	
Abromaitė Milda	22 mins 43 secs	46.67	1 / 2	
Abucevičiūtė Dominyka	50 mins 25 secs	70	1 / 2	
Acutė Audrita	26 mins 14 secs	73.33	1 / 2	

Users | Courses

› **Progress report**

Search

Showing all courses and their activity during the selected period.
Click on the name of the course to see a list of sessions
Click on the enroled user count to see a list of enroled users

Course name	Time spent in course	Students enrolled
Metodinė medžiaga	32 hours 36 mins 9 secs	0
Olimpiada – testas (2022 11 17 d.)	66 hours 24 mins 57 secs	2820
testinis kursas	–	1

Local / Custom Plugin
STATISTIC MODULE

- Local / Custom plugin for MOODLE - **statistics about different types of artefacts created and active participants in the courses**
- Developed and maintained by KTU EMTC
- Used:
  - **KTU**
  - Other universities and Colleagues
  - Schools and vocational schools
- Adapted for several business institutions (*KIKA, Ignitis*)

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Site administration

General   Users   Courses   Grades   Plugins

Notifications
Registration
Moodle services
Feedback settings
Advanced features
Migrate content from mo
Site admin presets
Download statistics **1**

Statistics 2022-11-28 22_26_36.xlsx **2**

Local / Custom Plugin
STATISTIC MODULE

Evaluate online courses

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J33 | fx | 7

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Course title	Course Id	Course ID number	Sub-category	Category	Course author	Registered teachers	Active teachers	Teacher last access	Registered students	Active students	Student last access	File	Page	URL
2	P000B001 Bakalauro baigiamasis projektas (Program	1691	P000B001	Programų inžinerijos katedra	INFORMATIKOS FAKULTETAS		29	10	2022-11-21 09:53:42	181	57	2022-11-28 09:27:18	21	4	11
3	T230M425 Statybinių gaminių ir konstrukcijų tyrimo	1692	T230M425	Statybos ir architektūros kompetencijų	STATYBOS IR ARCHITEKTŪROS FAKULTET		23	1	2022-11-28 15:45:36	23	17	2022-11-28 15:38:09	10	0	1
4	T230D438 Statybinių medžiagų ir konstrukcijų tyrim	1693	T230D438	Statybos ir architektūros kompetencijų	STATYBOS IR ARCHITEKTŪROS FAKULTET		1	0	2022-10-17 11:32:53	1	0	-	8	0	2
5	S000B106 Bakalauro baigiamasis projektas Irena Peka	1694	S000B106	Ekonomikos, verslo ir vadybos akademi	EKONOMIKOS IR VERSLO FAKULTETAS		15	0	2022-09-13 16:37:44	0	0	-	18	0	2
6	S000B111 Bakalauro baigiamasis projektas Irena Peka	1695	S000B111	Ekonomikos, verslo ir vadybos akademi	EKONOMIKOS IR VERSLO FAKULTETAS		23	0	2022-10-27 12:30:15	0	0	-	3	0	0
7	S190M191 Žmonių išteklių analitika Živilė Stankevičiū	1696	S190M191	Ekonomikos, verslo ir vadybos akademi	EKONOMIKOS IR VERSLO FAKULTETAS		2	1	2022-11-21 08:05:10	24	12	2022-11-28 11:07:39	87	0	12
8	S000B134 Bakalauro baigiamasis projektas (Marketin	1697	S000B134	Ekonomikos, verslo ir vadybos akademi	EKONOMIKOS IR VERSLO FAKULTETAS		22	1	2022-11-15 00:10:55	0	0	-	8	0	3
9	S000B150 Bakalauro baigiamasis projektas Aistė Dov	1698	S000B150	Ekonomikos, verslo ir vadybos akademi	EKONOMIKOS IR VERSLO FAKULTETAS		22	0	2022-09-08 12:36:18	0	0	-	22	0	4
10	T210M141 Adaptyvioji mechanika: ryšiai, mechanizm	1699	T210M141	Technologijų ir verslumo kompetencijų	PANEVĖŽIO TECHNOLOGIJŲ IR VERSLO F...		1	0	2021-01-11 17:41:13	0	0	-	0	0	1
11	T210M145 Adaptyvios mechatroninės sistemos Aurin	1700	T210M145	Technologijų ir verslumo kompetencijų	PANEVĖŽIO TECHNOLOGIJŲ IR VERSLO F...		1	0	2020-10-16 17:59:05	0	0	-	0	0	1
12	T280M109 Bepilotės antžeminio transporto sistemos	1701	T280M109	Technologijų ir verslumo kompetencijų	PANEVĖŽIO TECHNOLOGIJŲ IR VERSLO F...		1	0	2020-06-04 17:56:04	0	0	-	6	0	0
13	T280B004 Eismo saugumas Arūnas Tautkus	1702	T280B004	Technologijų ir verslumo kompetencijų	PANEVĖŽIO TECHNOLOGIJŲ IR VERSLO F...		1	0	2020-03-24 09:52:43	0	0	-	0	0	0
14	P190B106 Dinamika Aurimas Česnulevičius	1703	P190B106	Technologijų ir verslumo kompetencijų	PANEVĖŽIO TECHNOLOGIJŲ IR VERSLO F...		1	0	2018-11-09 10:11:36	0	0	-	0	0	0
15	T210B052 Automobiliai, jų eksploatacija ir remontas	1704	T210B052	Technologijų ir verslumo kompetencijų	PANEVĖŽIO TECHNOLOGIJŲ IR VERSLO F...		1	0	2019-04-17 08:44:19	0	0	-	0	0	0

	S	T	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AL	AM	AN	AO	AP	AR	AS	AT	AU	AV	AW	AX	AY
1	Forum	Announcements posted in Forum	Forum (not news) posts	Quiz	Questions	Student submitted files	Glossary	Entries in glossary	Wiki	Database	Database entries	Choice	Lesson	Feedback	Workshop	Quiz attempts	HVP(h5p)	Groups Conversations	Date	Course language	Big Blue Button	KnockPlop	Zoom	LTI	Course Size MB	Turnitin	Turnitin files
2	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2022-11-28 15:55:03	en	0	0	0	0	11224	0	0
3	2	0	0	2	9	7	0	0	0	0	0	0	0	0	0	0	0	0	2022-11-28 15:55:03	lt	0	0	0	0	833	0	0
4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2022-11-28 15:55:03	lt	0	0	0	0	166	0	0
5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2022-11-28 15:55:03	lt	0	0	1	0	42	0	0
6	1	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2022-11-28 15:55:04	lt	0	0	0	0	758	0	0
7	1	4	0	1	10	46	0	0	0	0	0	0	0	0	0	1	0	0	2022-11-28 15:55:04	lt	0	0	0	0	1424	3	135
8	1	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2022-11-28 15:55:04	lt	0	0	0	0	1310	0	0
9	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2022-11-28 15:55:04	lt	0	0	2	0	168	0	0
10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2022-11-28 15:55:04	lt	0	0	0	0	0	0	0
11	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2022-11-28 16:00:03	lt	0	0	0	0	0	0	0
12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2022-11-28 16:00:03	lt	0	0	1	0	57	0	0
13	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2022-11-28 16:00:03	lt	0	0	0	0	0	0	0
14	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2022-11-28 16:00:03	lt	0	0	0	0	0	0	0
15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2022-11-28 16:00:03	lt	0	0	0	0	0	0	0

Local / Custom Plugin
STATISTIC MODULE

- Visualizations with PoverBI

- Connected to Moodle DataBase

- Custom visualizations - Dashboard

- Automatic update every night
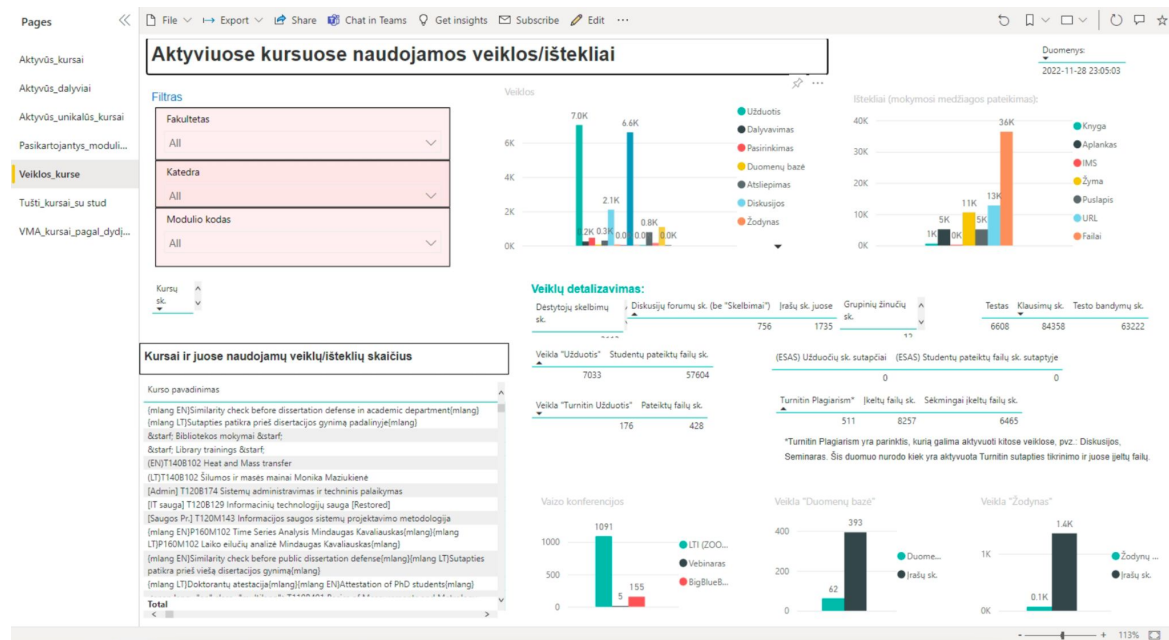
Open >>

Local / Custom Plugin
STATISTIC MODULE

- **Essay change and create own analysis**
- **Edit queries**

Main prerequisites for using LA

- Teachers' awareness of existing possibilities
- Completion tracking of MOODLE course activities