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Efficacy analytics audition project

Project report

The purpose of this project was to explore the related dataset, and prepare a presentation of any findings or actionable insights.

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Data dictionary

The dataset comes from a Pearson e-learning platform, an online workbook that is used alongside a paper textbook. Students complete activities, either assigned by the teacher or chosen by themselves.

- **learner_id**: anonymized student identifier
- **country**: country code of the student
- **in_course**: "t" if the student belongs to course taught by a teacher (as opposed to studying alone)
- **unit**: number or name of a unit (chapter) in the workbook
- **avg_score**: average percentage score on all activities within a given unit
- **completion**: the percentage of activities completed in a given unit, out of all activities available in that unit
- **inv_rate**: This is the extent to which a student deviates from the suggested order of activities by the pedagogy experts within a given unit. A value of zero indicates no departure from the suggested order, a value of one indicates a complete reversal of the order.

Students
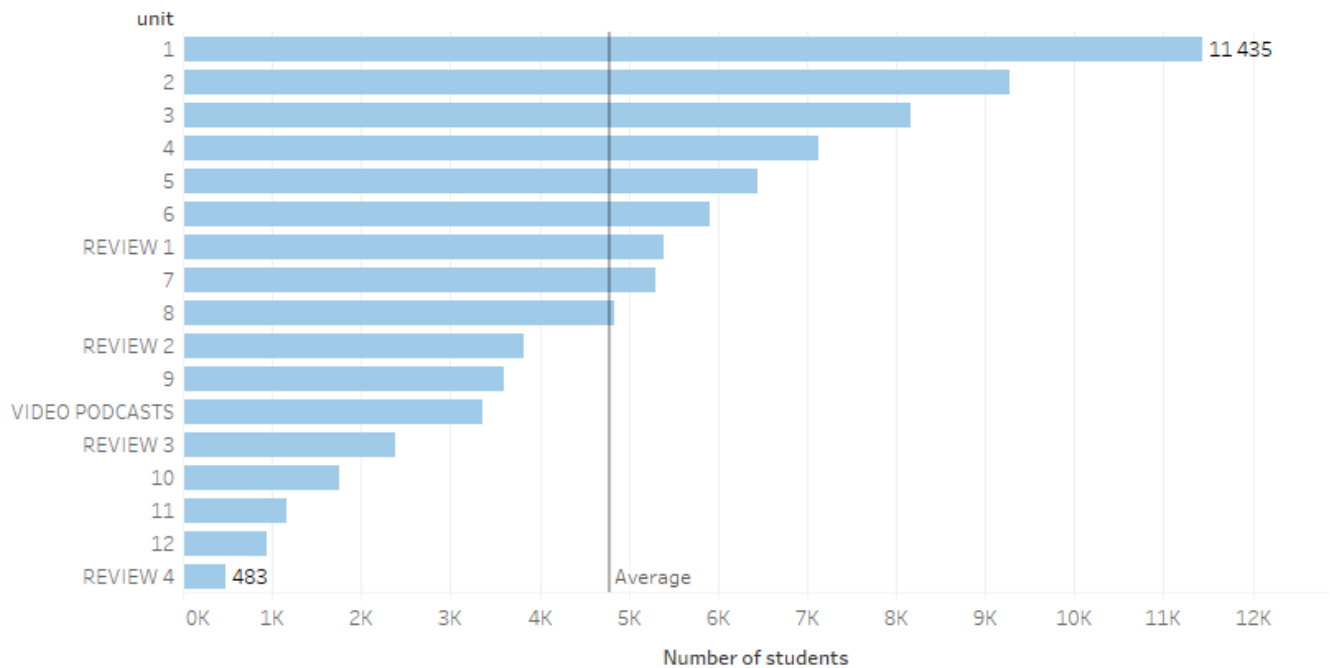
The number of students across the world

Map based on Longitude (generated) and Latitude (generated). Size shows distinct count of learner_id. Details are shown for country.

There are 13158 students from at least 85 countries. Only 40 students are from countries and territories not specified. The following countries have the highest number of students: Turkey (6665), Spain (1640), Columbia (1391) and Poland (1256).
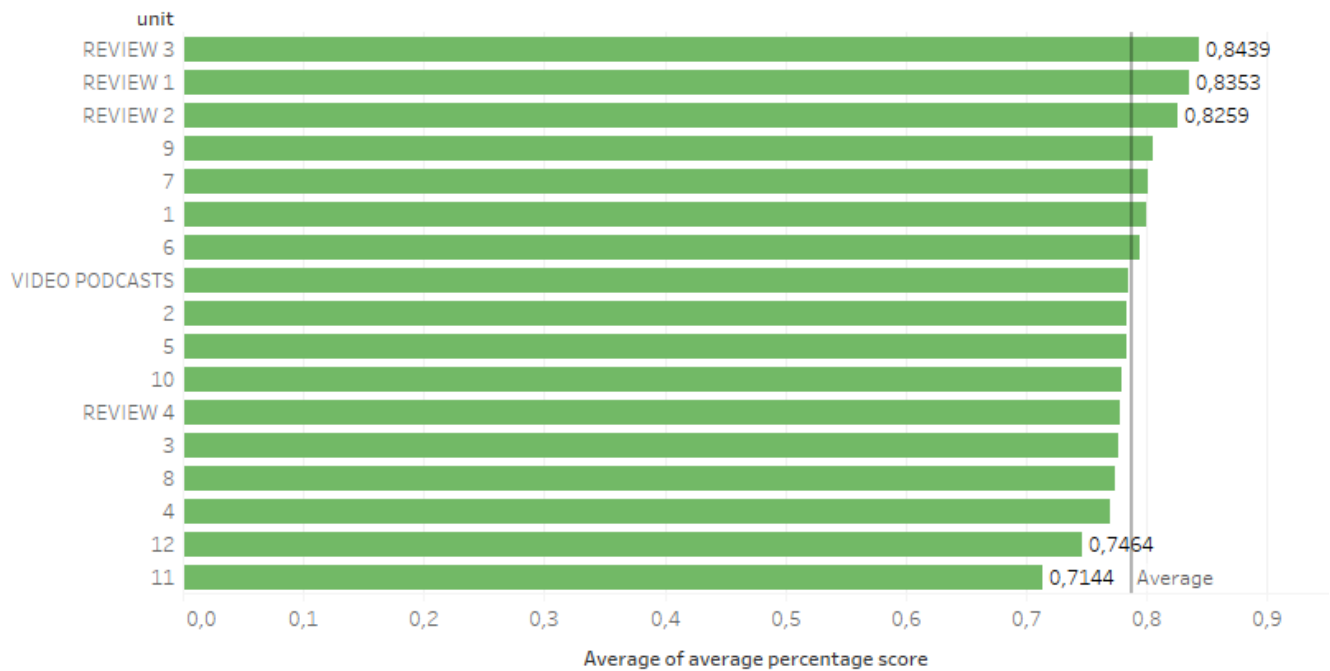
Units

The number of student who started the unit

Distinct count of learner_id for each unit.

The average number of students enrolled to any unit is about 4790. There are 9 units which have more students than the average. First unit has the highest number of participants – 11435 students. The unit with the lowest number of participants is „Review 4" (only 483 students). The number of students who at least started the unit shows the fact that students may have a problem with motivation to learn till the end of the course.
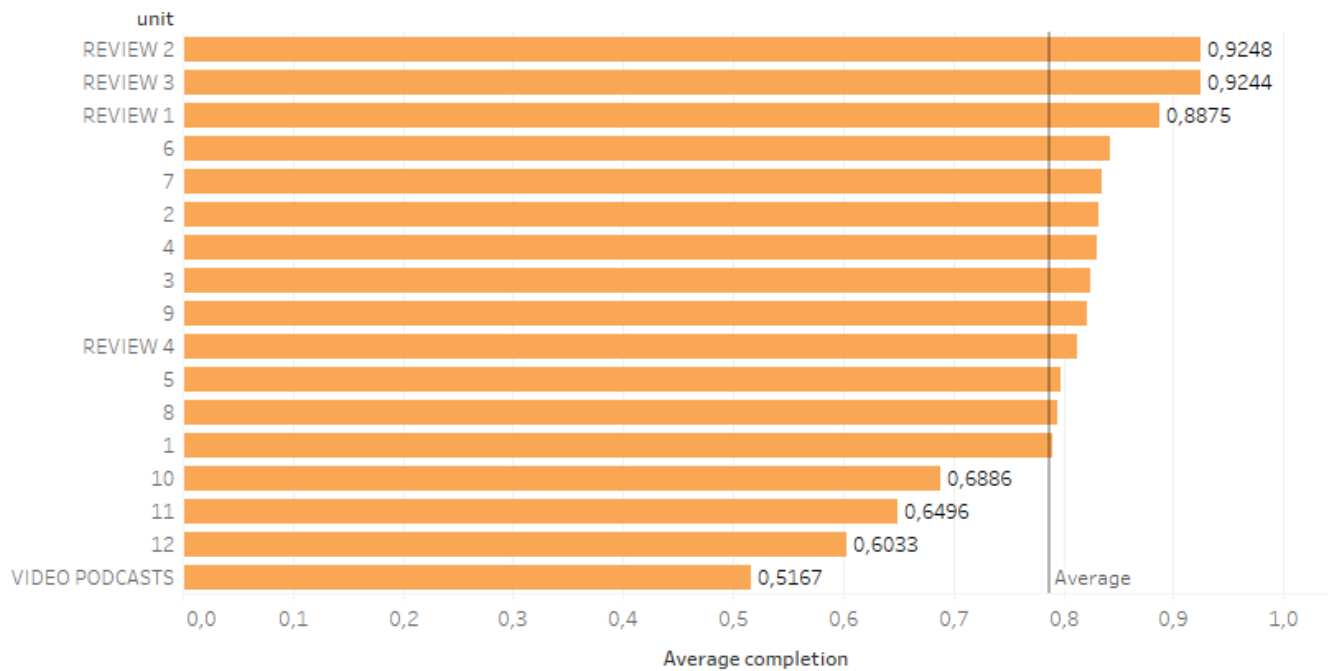
The average of average score for unit

Average of avg_score for each unit.

The average of avg_score for all units is about 78,81%. The averages of avg_score for units 11 and 12 are significantly below the average for the whole course. Also the average of avg_score for units „Review 1",
„Review 2" and „Review 3" are above the average. The difficulty level of activities in mentioned units should be checked by the educational experts.
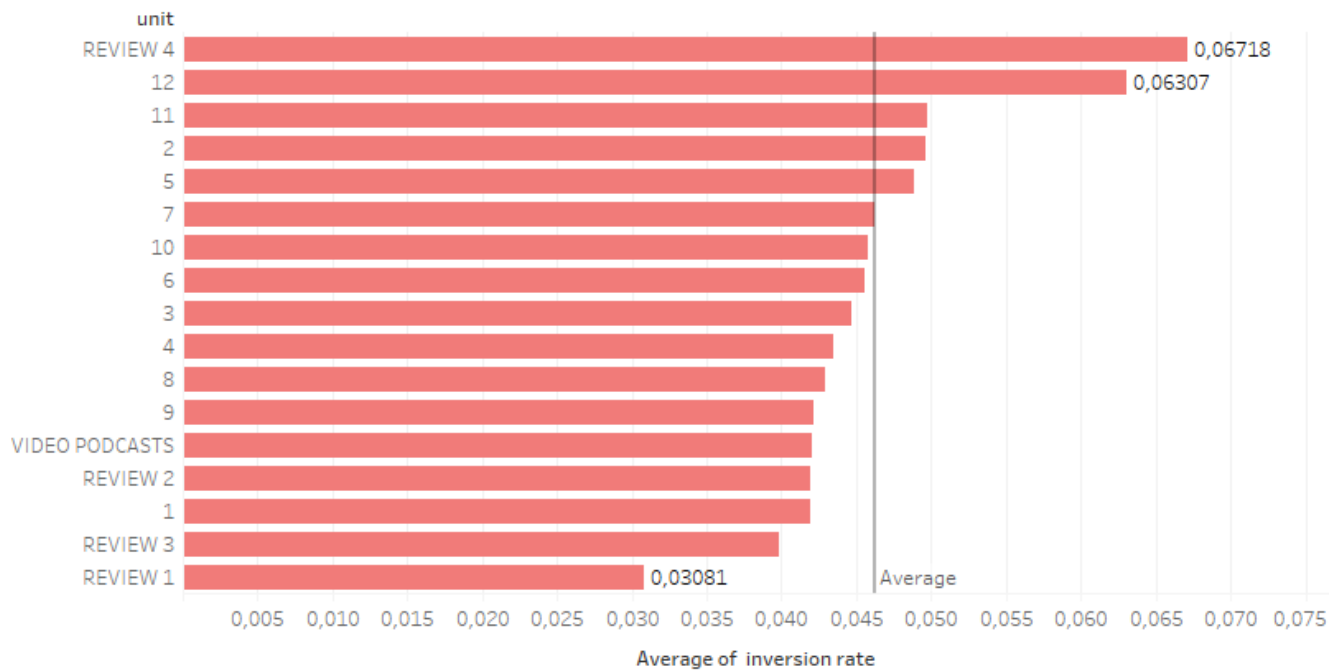
The average of completion for unit

Average of completion for each unit.

The average of completion for all units is about 78,67%. The averages of completion for units 10, 11 and 12 are significantly below the average for the whole course. Also the average of completion for units „Review 1", „Review 2" and „Review 3" are above the average. This may confirm the conclusions from the previous chart.

Another interesting finding is the very low average of completion for the „Video podcasts". The cause of this situation requires a thorough examination. Are these technical issues or videos are uninteresting for students?

The average of inversion rate for unit

Average of inv_rate for each unit.

The average of inv_rate for all units is about 4,62%. The averages of inv_rate for units 12 and „Review 4" are significantly above the average for the whole course. This units may require revision by the educational experts.

Studying on your own or with the teacher

Courses led by teacher vs. individually - comparison

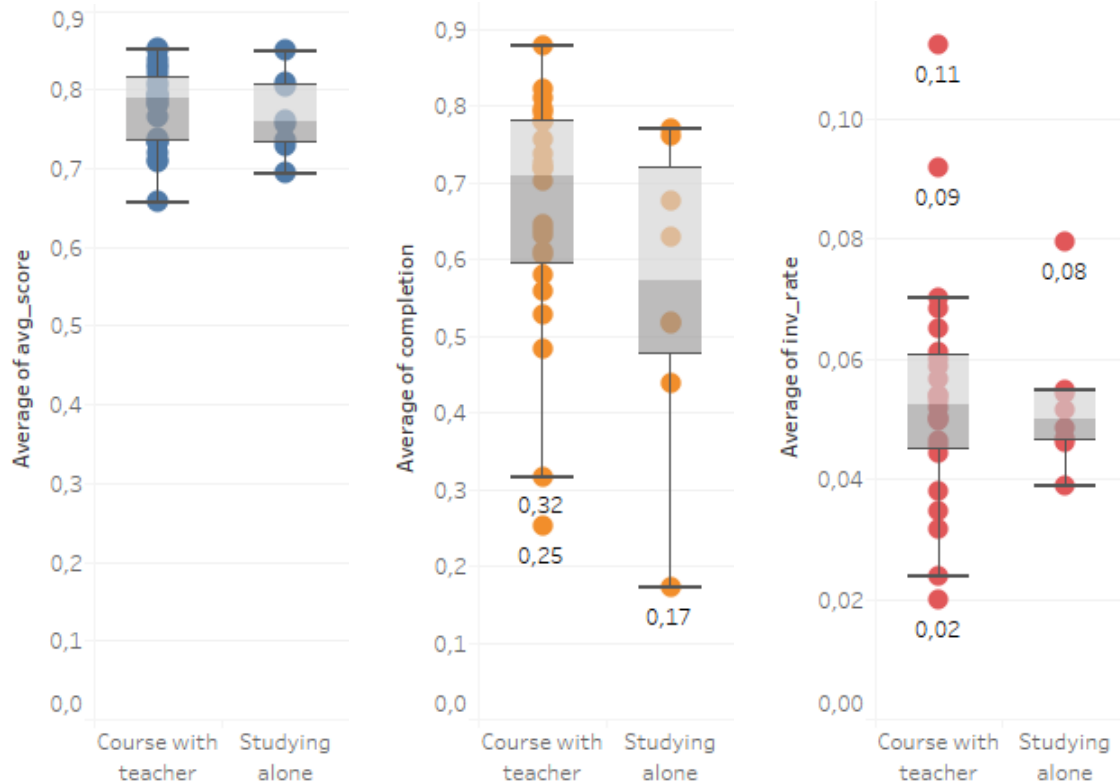|	Number of students	Average of avg_score	Average of completion	Avgerage of inv_rate
Course with teacher	11 644	0,80	0,82	0,04
Studying alone	1 514	0,75	0,67	0,05

Almost 9 out of 10 students take the course taught by the teacher. If you look at the average results of this group, it is hardly surprising. This students have better average of avg_score of about 5%. And what is even more important: they have much better average of completion – about 15%.

		Number of students	Average of avg_score	Average of completion	Avgerage of inv_rate
CH	Course with teacher	183	0,76	0,32	0,05
	Studying alone	25	0,85	0,17	0,08
CO	Course with teacher	1 236	0,74	0,61	0,06
	Studying alone	155	0,69	0,44	0,05
CZ	Course with teacher	105	0,79	0,58	0,07
	Studying alone	26	0,73	0,52	0,05
ES	Course with teacher	1 303	0,82	0,82	0,04
	Studying alone	337	0,80	0,77	0,04
IT	Course with teacher	179	0,84	0,73	0,06
	Studying alone	73	0,81	0,63	0,05
NL	Course with teacher	241	0,71	0,74	0,05
	Studying alone	32	0,76	0,52	0,05
PL	Course with teacher	1 117	0,79	0,81	0,06
	Studying alone	139	0,76	0,76	0,05
RU	Course with teacher	85	0,79	0,63	0,07
	Studying alone	12	0,82	0,63	0,03
TR	Course with teacher	6 070	0,80	0,88	0,04
	Studying alone	595	0,73	0,68	0,05

There significant differences in average of completion in some countries depending on the course is taught by a teacher or studying individually. It can be observed that the average of completion is better (or even much better) for courses led by teacher in countries like Turkey, Netherlands, Italy, Columbia, Switzerland, Poland, Spain and Czech Republic.

Countries which most deviate from the average are shown on box-and-whisker plots:

Countries with at least 20 students are no outliers regarding to average of avg_score. Switzerland (about 32%) and Oman (about 25%) are countries with very low average of completion if we consider the course led by teacher. Students from Switzerland have also a poor average of completion (about 17%) when they study individually.

Students from Belarus and Oman which take part in courses with teacher have high average of inv_rate – respectively about 11% and 9%. In Oman it probably results in a quite low average of avg_score – about 66%. Studying alone in Switzerland also has a high average of inv_rate – about 8%. It may be the reason of poor avg_score and completion of students in Switzerland.