# Executive summary of the Report - WP1 –
## "Learning analytic report for online training for teachers in five European countries."

This report is a learning analytics (LA) survey of the AI4T MOOC, an online course on AI knowledge training for teachers. The LA focuses on the traces collected from the different e-learning platforms in five European countries (France, Luxembourg, Ireland, Italy, and Slovenia) participating in the AI4T project.

The report is focused on observing and describing, from a macro perspective, the **common patterns of digital behaviour** of the group of teachers involved in the training. The results of the LA will also be used to understand the performance of the online learning courses in each country and to inform the evaluation of impact of other teams in the project.

The project consortium hopes that this report will help researchers to understand in more detail the circumstances surrounding the online training of teachers in the AI4T project, in particular the commonalities and differences of the digital behaviours of trained teachers across countries.

The results are presented as Descriptive Card (see 3.3) with 6 numerical indicators **(Completion, Engagement, Curiosity, Performance, Reactivity and Regularity)** and 2 non-numerical indicators **(Attention pattern and time pattern)**. Each indicators reflect a common property of the teachers' group. The values of the numerical indicators are in the range [0,1], with values closer to 1 indicating that the group of teachers is measuring the indicator better, and vice versa, indicating that the group of teachers is lacking in that indicator. The non-numerical indicators are shown as graphs.

After comparing the results for the five countries, it can be concluded that:

**Firstly,** the clustering result for each country contain exactly two clusters. This shows that there are indeed clear differences between users in their willingness, enthusiasm, engagement, etc., to participate in online courses based on the indicators that were chosen. Meanwhile, there are only two clusters and no more, indicating that the selected indicators do not show significant differences in multiple dimensions for the users.

**Secondly,** there is a greater number of teachers who showed a positive attitude towards the online training course. Among the two user groups, except for Luxembourg, the number of user groups with higher values for each indicator is greater than the number of user groups with lower values. In fact, even in Luxembourg, the difference is only 8 users versus 10 users, which is more affected by the lower total number of users. This proves that in online learning courses, in general, more users actively participate, are willing to complete, and respond actively. This can also be seen from the subsequent global Descriptive Card Mining results.

**Finally,** the stability of the "Regularity" value indicates that teachers are willing to follow the schedule of the training pathway. For the 5 countries, the difference in "Regularity" indicator between the 2 user groups is very low, and the user's attention distribution through time is highly related to the training path details of each country. On the one hand, it can be thought that users follow the courses arranged according to the training path. On the other hand, it can be thought that the selection of the user "Regularity" indicator should be considered in a longer period of learning or should have more details about time for deeper analysis. **In the global LA result, the commonalities above remain** the same for each numerical indicator.

From the comparison of the results, we can also notice the following differences:

**The indicators that contribute the most to distinguishing different groups of teachers vary across countries, which can be related to the chosen training paths.** In France and Luxembourg, the "Performance" indicators are the most different between the two cluster. While in Italy, Ireland and Slovenia, the most significant differences are in "Completion" and "Reactivity" of the respective clusters.

**The non-numerical indicators vary considerably because of the different organization of training pathways in each country.** From the analysis of attention pattern and time pattern, it is difficult to find similarities among various countries because training programs for online courses and other training (webinars, textbooks, face-to-face training, etc.) are quite different.

**Most of the differences between countries come from the localization of MOOCs in each country.** Part of these differences are due to language differences, personnel arrangements, and other factors in each country, so they exist objectively. The other part is due to the failure to consider the needs of learning analysis and the differences in e-learning platforms in various countries in the initial design of the AI4T experimentation. This part can be avoided and eliminated in future work.

We expect these observations guide other researchers' observations and give experimentation recommendations for future projects including online trainings.

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