Effective feedback through learning analytics dashboards

Workshop
Delft, 8 April 2019

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Effective feedback through learning analytics dashboards is
grounded: based on research

4 levels of feedback (Hattie & Timperley, 2007)
1. Task and products
2. Process
3. Self-regulation
4. Self

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Self-regulated learning (Zimmerman, 1990)
- Learners are active participants in their learning.
- Cyclical process: goal setting, performing, self-evaluation
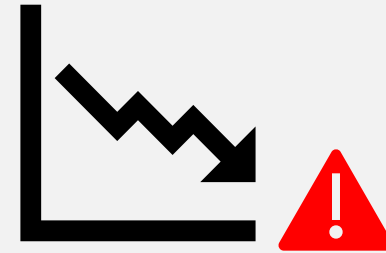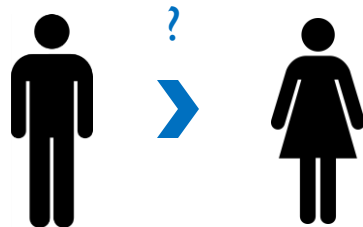- Most common theoretical background for dashboards (Jivet et al., 2017)

Effective feedback through learning analytics dashboards is

actionable: guides users to action

Warning!

Male students have 10% less
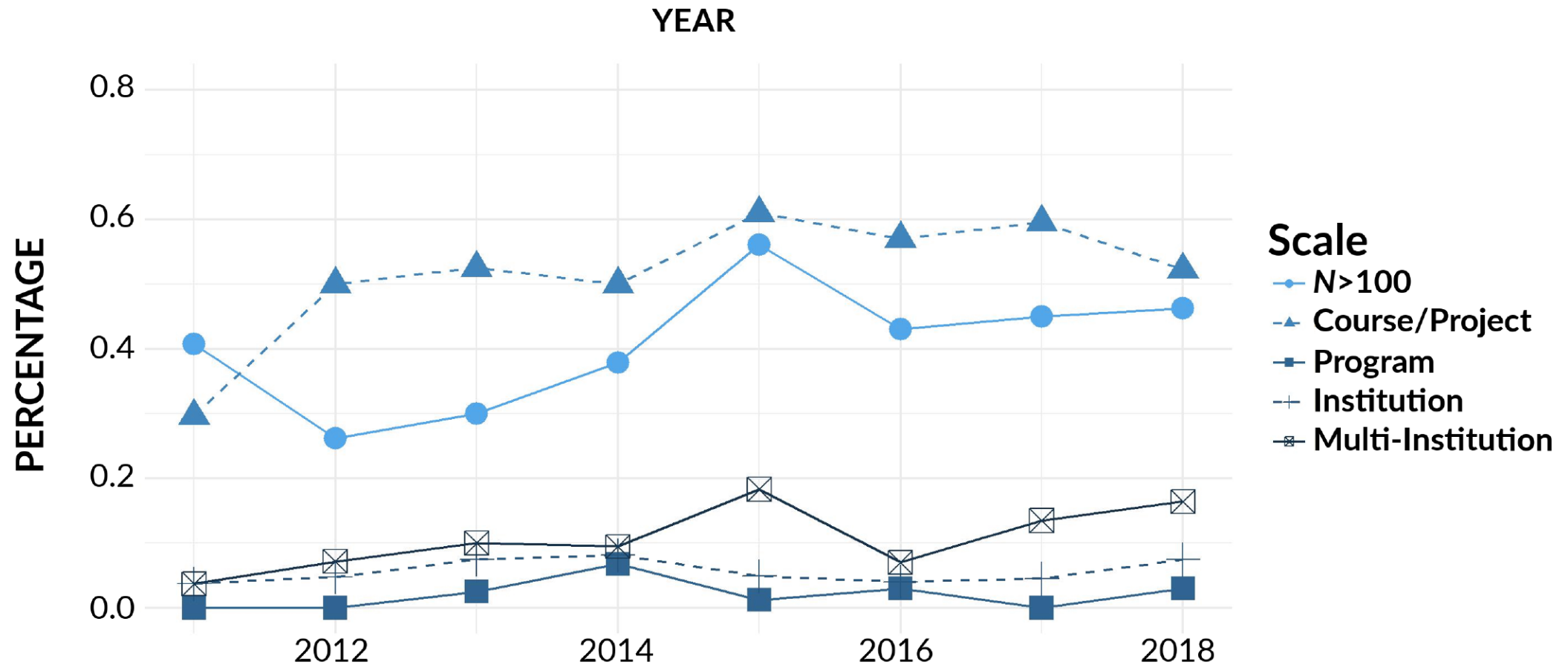
probability to be successful.

You are male.

> action?

Warning!

Your online activity is

lagging behind.

> action?

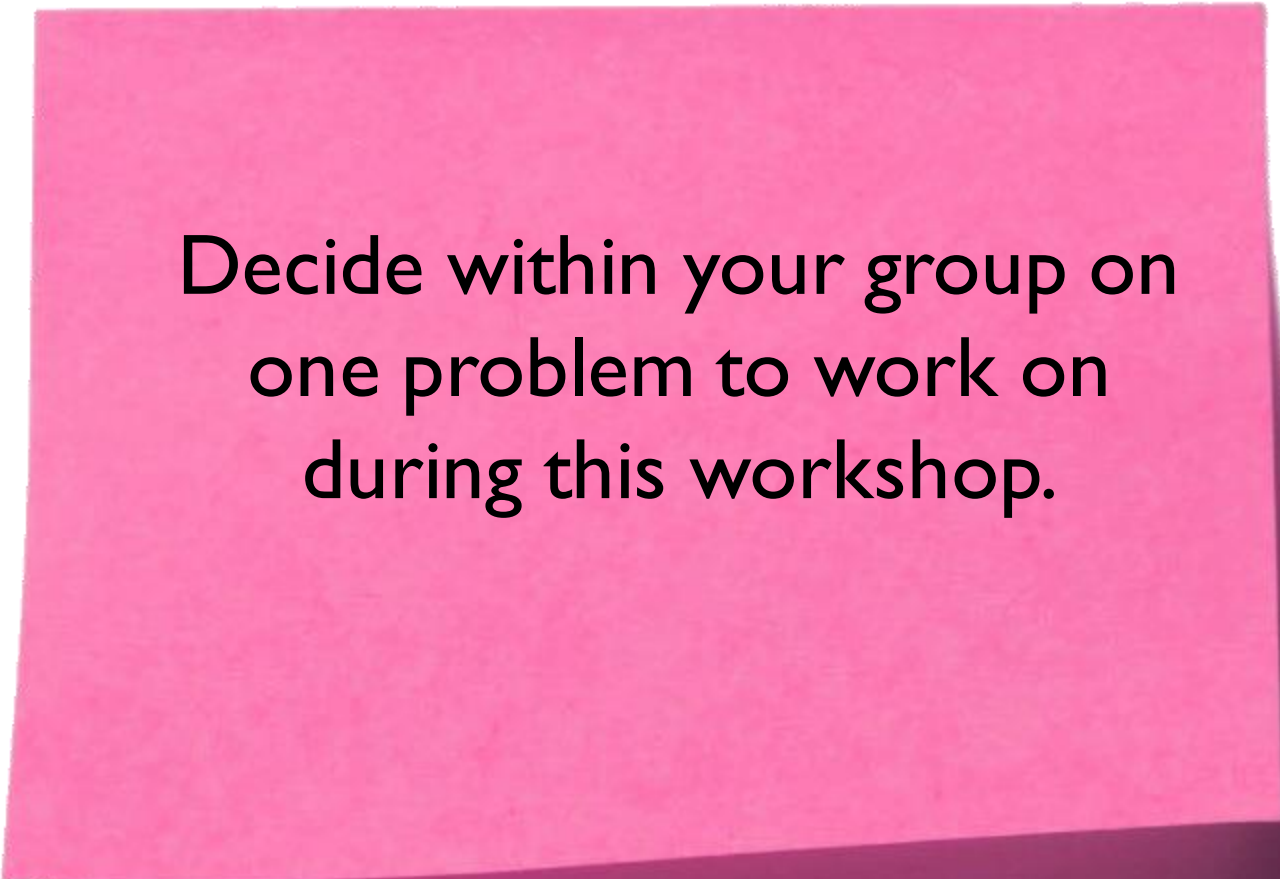Effective feedback through learning analytics dashboards is

scalable: can be delivered to large cohorts

YEAR

Dawson, S., Joksimovic, S., Poquet, O., & Siemens, G. (2019, March). Increasing the Impact of Learning Analytics. In *Proceedings of the 9th International Conference on Learning Analytics & Knowledge* (pp. 446-455). ACM.

Define a problem

Choose a problem from your daily practice or your institution where you think learning analytics can help?

Define a problem

Decide within your group on one problem to work on during this workshop.

Identify actions

What actions do you expect [want] to be taken after consulting the dashboard?

Doodle dashboard elements

What information do you
need to know in order to
solve this problem?

Sketch a visualisation element
to show this information.

Plan the evaluation

How can you prove to stakeholders that you are solving the problem?
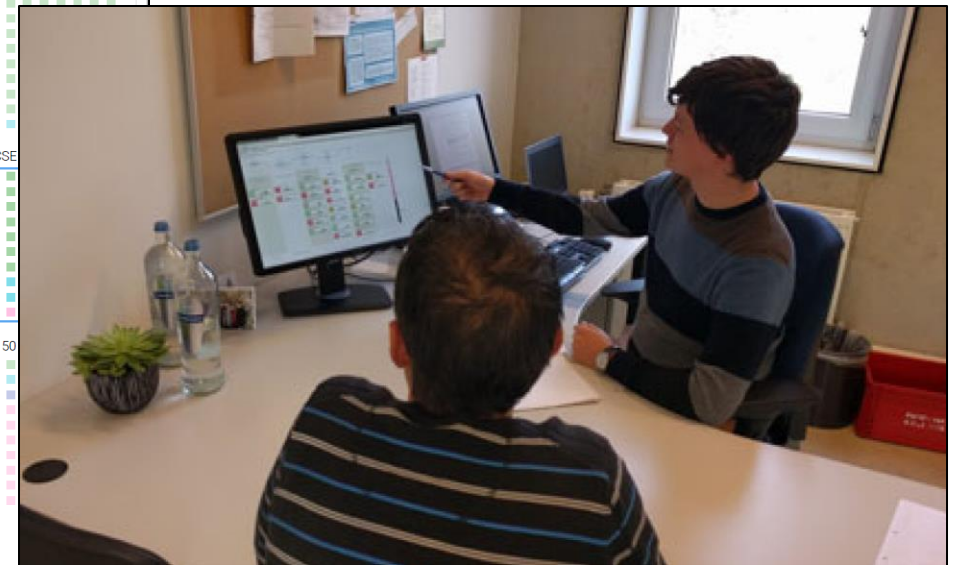
Discuss your group solution

Presentation of the group results

What does research say?
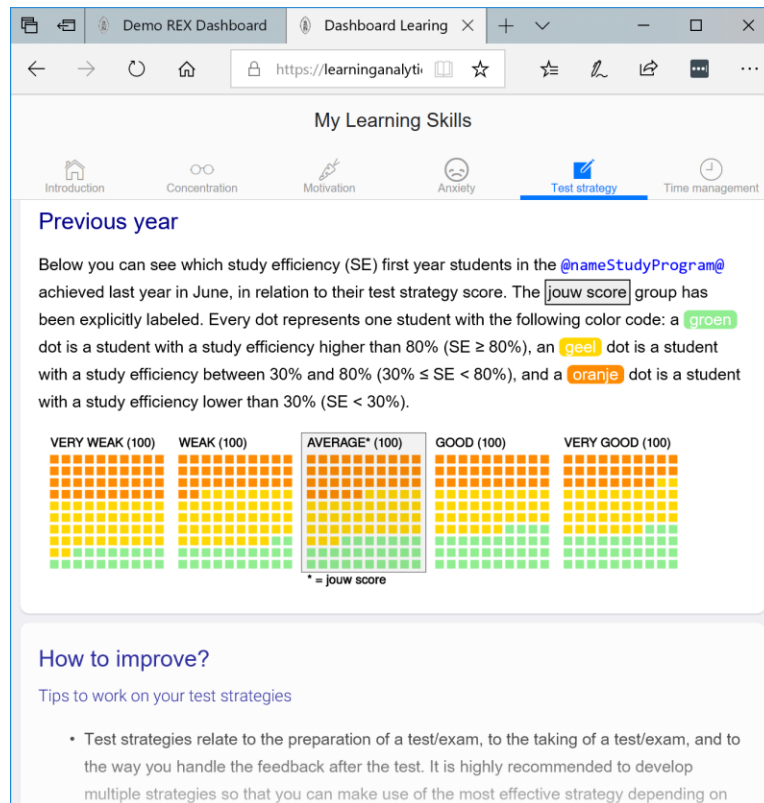
Dashboards can support conversations

Charleer, S., Moere, A. V., Klerkx, J., Verbert, K., & De Laet, T. (2018). Learning analytics dashboards to support adviser-student dialogue. *IEEE Transactions on Learning Technologies*, *11*(3), 389-399.

What does research say?

Dashboard usage is related to the profile of the user.

using the dashboard

reading the tips

Broos, T., Peeters, L., Verbert, K., Van Soom, C., Langie, G., & De Laet, T. (2017, July). Dashboard for actionable feedback on learning skills: scalability and usefulness. In *International Conference on Learning and Collaboration Technologies* (pp. 229-241). Springer, Cham.
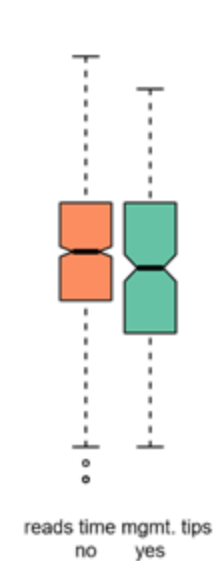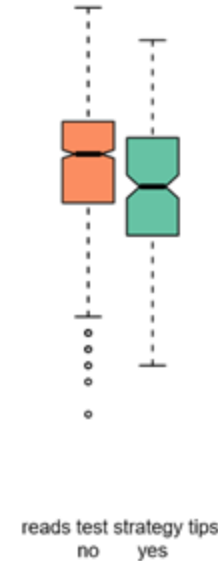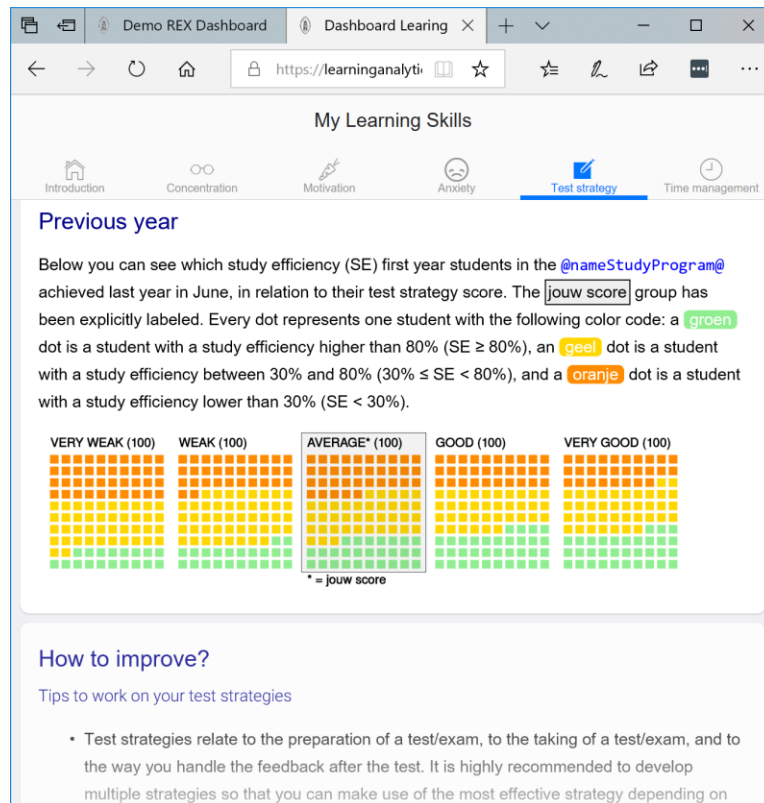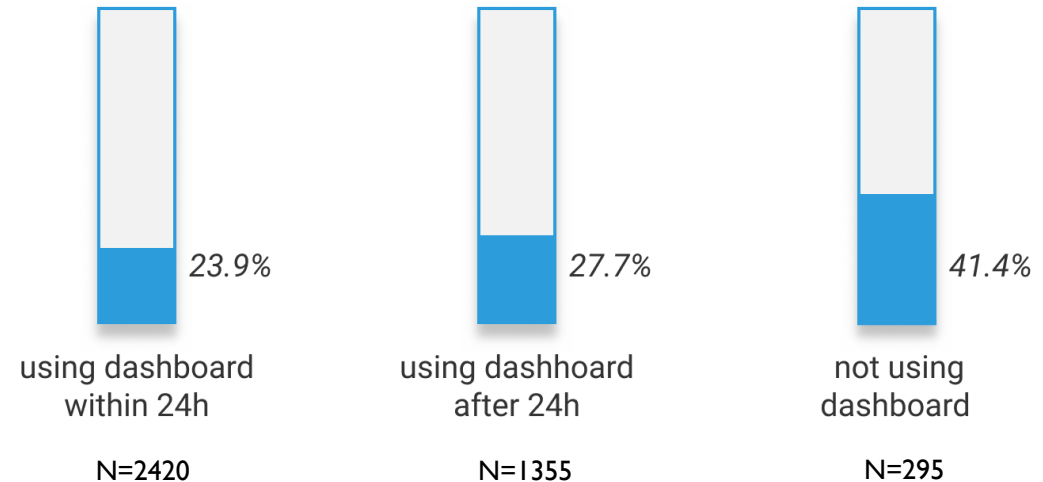
What does research say?

Dashboard usage produces learning traces too.

Proportion of students below the 30% study efficiency threshold.

using dashboard within 24h	using dashhoard after 24h	not using dashboard
23.9%	27.7%	41.4%
N=2420	N=1355	N=295

Broos, T., Verbert, K., Langie, G., Van Soom, C., & De Laet, T. (2018, September). Low-Investment, Realistic-Return Business Cases for Learning Analytics Dashboards: Leveraging Usage Data and Microinteractions. In European Conference on Technology Enhanced Learning (pp. 399-405). Springer, Cham.
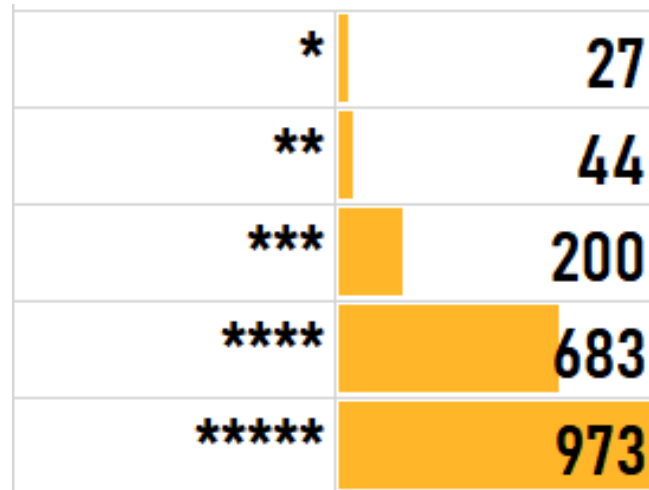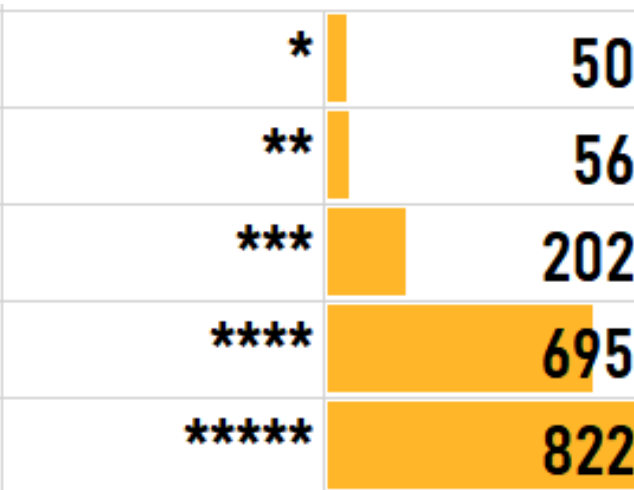
What does research say?

Students are positive about dashboards

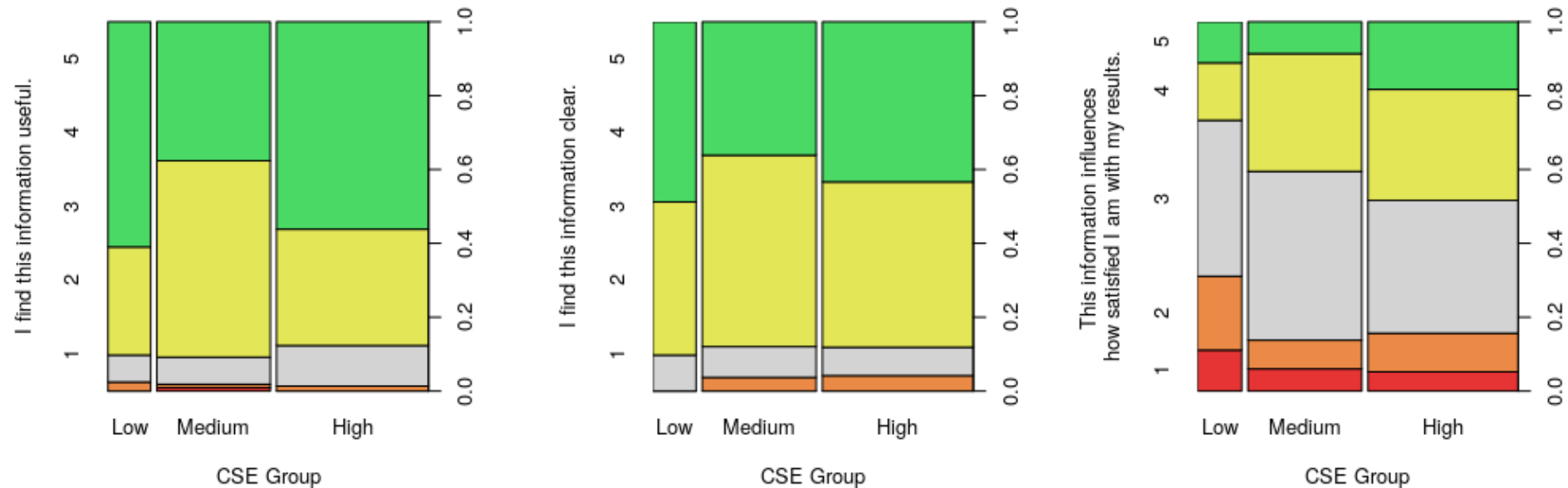| The dashboard is useful		The dashboard is clear, I understand it		The dashboard has added value	
*	27	*	50	*	85
**	44	**	56	**	97
***	200	***	202	***	313
****	683	****	695	****	658
*****	973	*****	822	*****	857
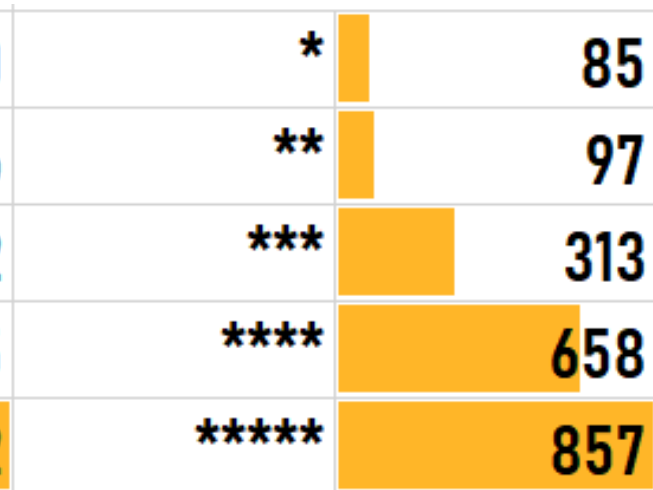
What does research say?

Broos, T., Verbert, K., Langie, G., Van Soom, C., & De Laet, T. (2017). Small data as a conversation starter for learning analytics: exam results dashboard for first-year students in higher education. *Journal of Research in Innovative Teaching & Learning, 10(2),* 94-106.

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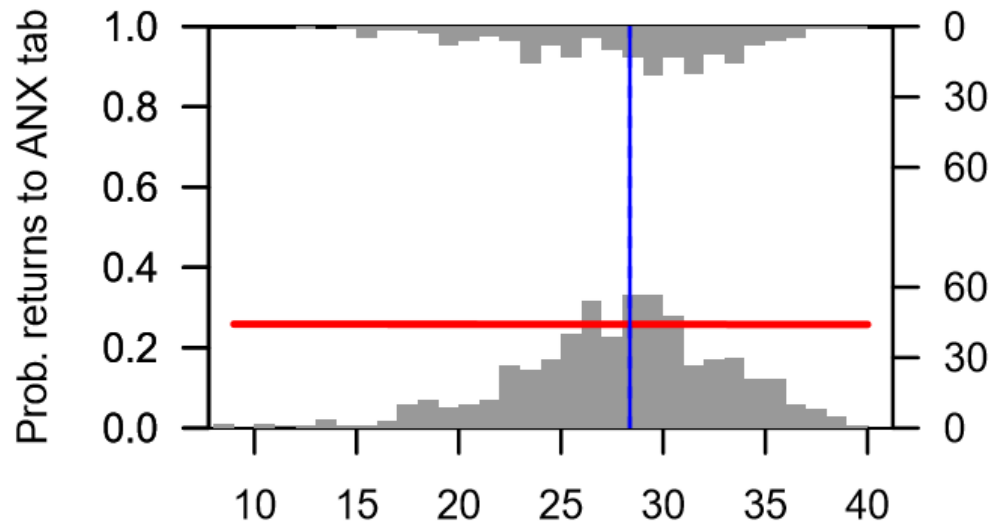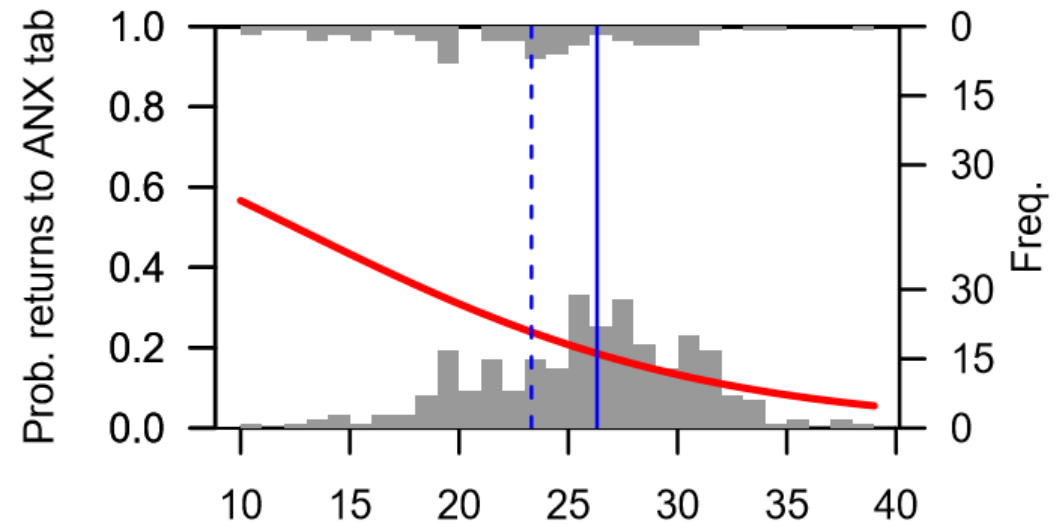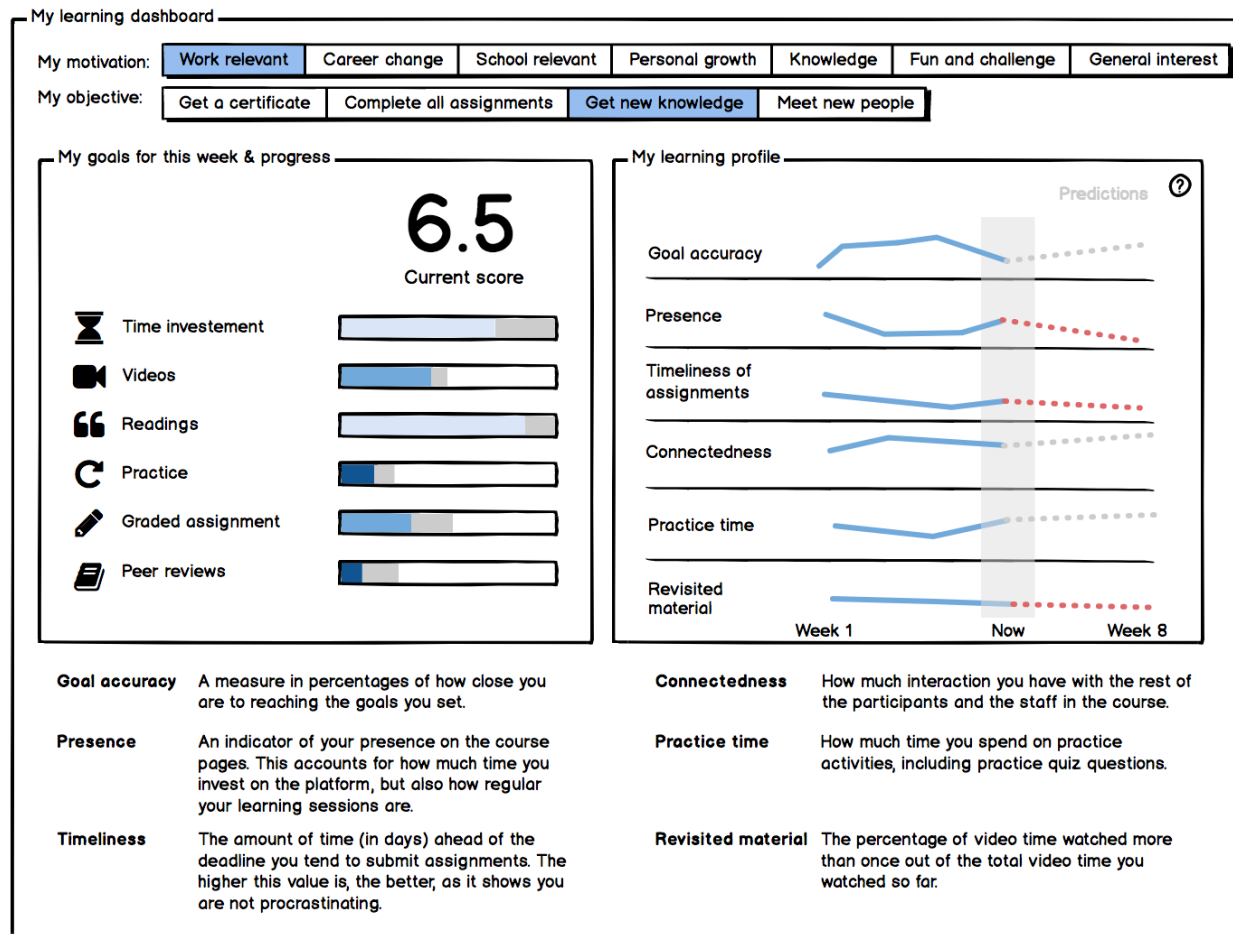
What does research say?

1. Transparency of design
2. Reference frames
3. Support for action

Jivet, I., Scheffel, M.,Schmitz, M., Robbers, S.,Specht, M., & Drachsler, H. (submitted, submitted, under review).

What does research say?

A. Mastering the course   B. Passing the course

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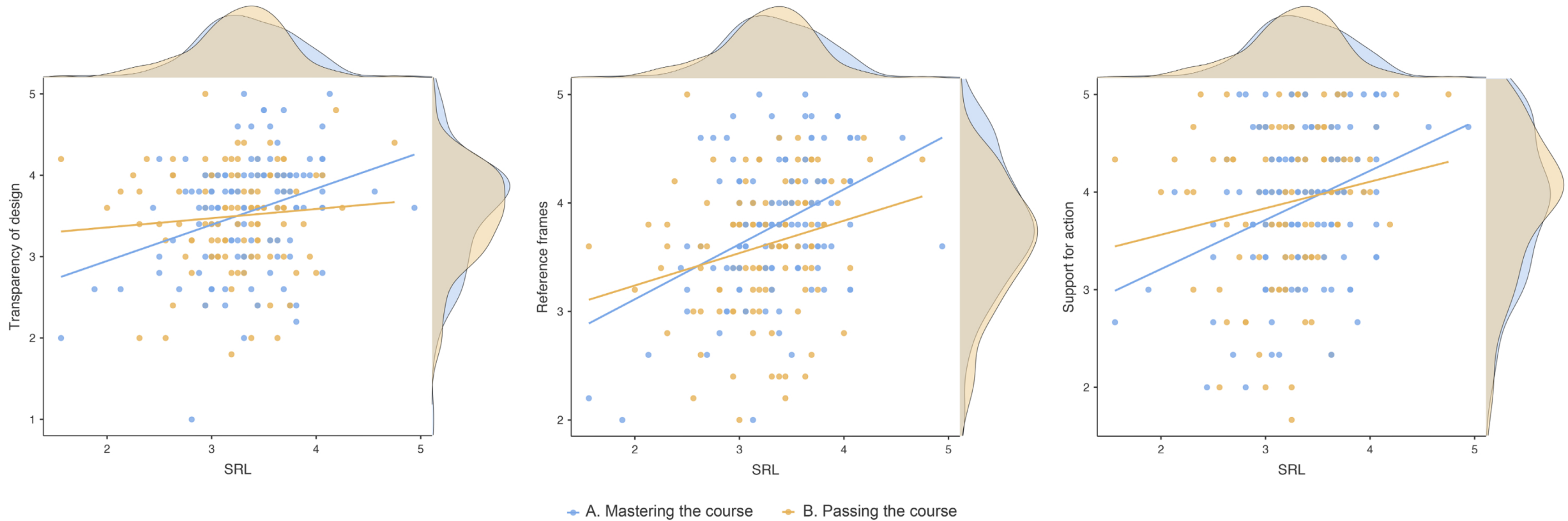
What does research say?

Reference frames

1. Social
   - Class
   - Teammates
   - Previous graduates
   - Top peers
   - Peers with similar goal

2. Achievement
   - Learning outcomes
   - Learning goals

3. Progress
   - Self

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What does research say?

Learning

Analytics

References

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Hattie, J., & Timperley, H. (2007). The power of feedback. Review of educational research, 77(1), 81-112.

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Zimmerman, B.J. (1990). Self-regulated learning and academic achievement: An overview. Educational psychologist, 25(1), 3-17.