Is it really fun? Exploring Assumptions in Course Design by Analysing Student Feedback on the Data Awareness Rallye

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SoTL Project

Data literacy is an increasingly essential skill in various fields and educational institutions are developing courses to equip students with the necessary skills to use, interpret and deal with data effectively. The Data Awareness Rallye is a gamified online course for first-semester undergraduate students to acquire data awareness as the foundation of data literacy.
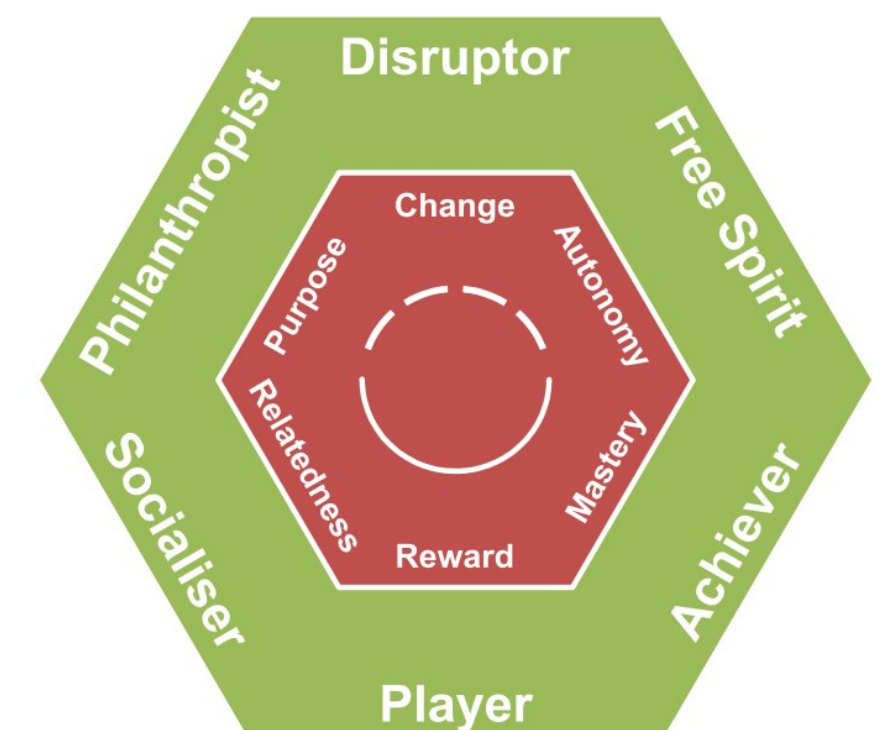
In this SoTL project, we analysed student feedback to explore, if the motivation of different gamification user types according to the gamification Hexad user type design (Marczewski, 2015) is reflected in students' feedback. Furthermore, we aimed to gain insight, if the needs of the self-determination theory of motivation (Deci & Ryan, 2000) are indicated in the qualitative feedback.

We gained several clues for further research and are looking forward to discuss these during poster sessions in order to formulate a research question for further studies.

Data Awareness Rallye. In 5 levels from zero to more data awareness – no programming knowledge required
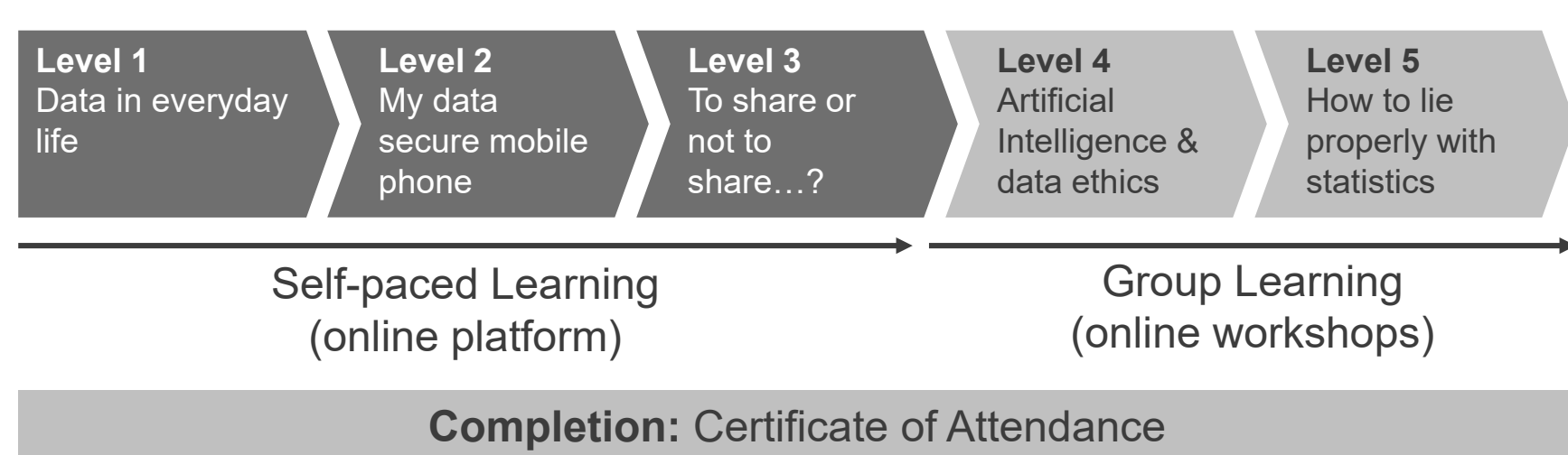
Figure 1: Structure of the Data Awareness Rallye. Timeframe: 24-30 hours ~ 1 CP

Results

Scoring of student feedback. 598 students completed the Data Awareness Rallye in the four runs that were offered in the time frame between April 2021 and February 2023. For our analysis, we received 363 feedback forms from rallye graduates.

Measure of interrater agreement. In order to explore the quality of feedback ratings, we calculated Cohens Kappa (*K*) for interrater agreement.
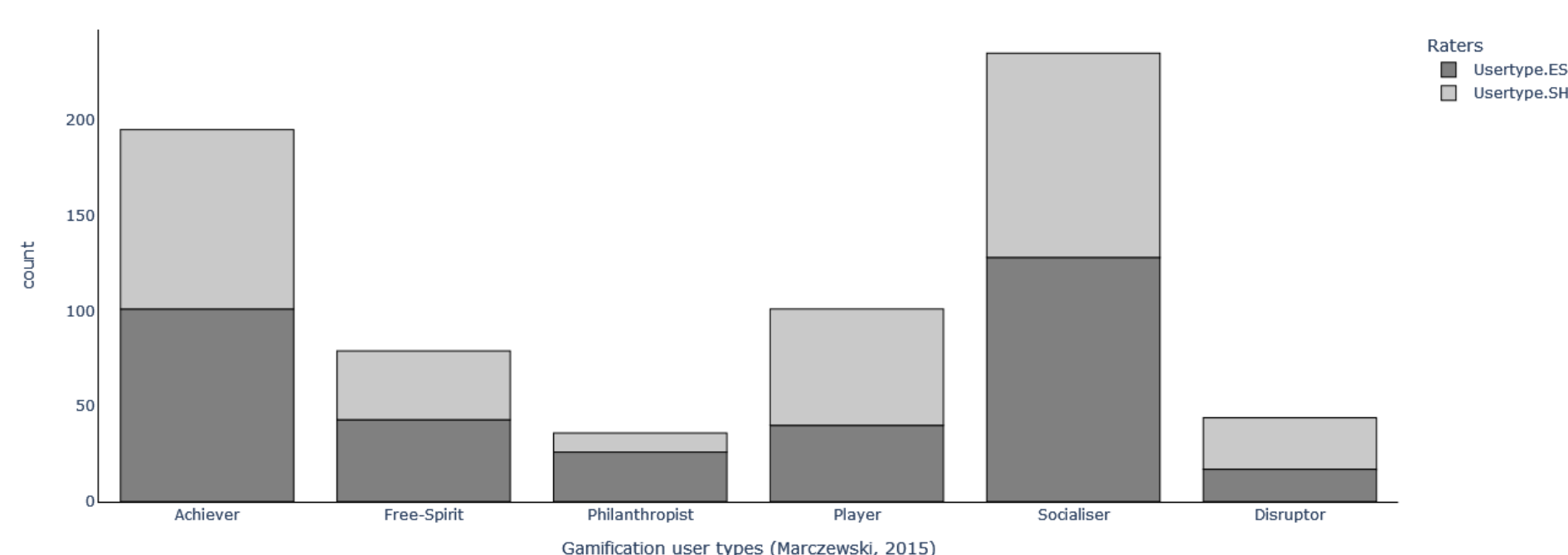

Figure 3. Bar chart of gamification user types (Marczewski, 2015) scored by the raters ES and SH.
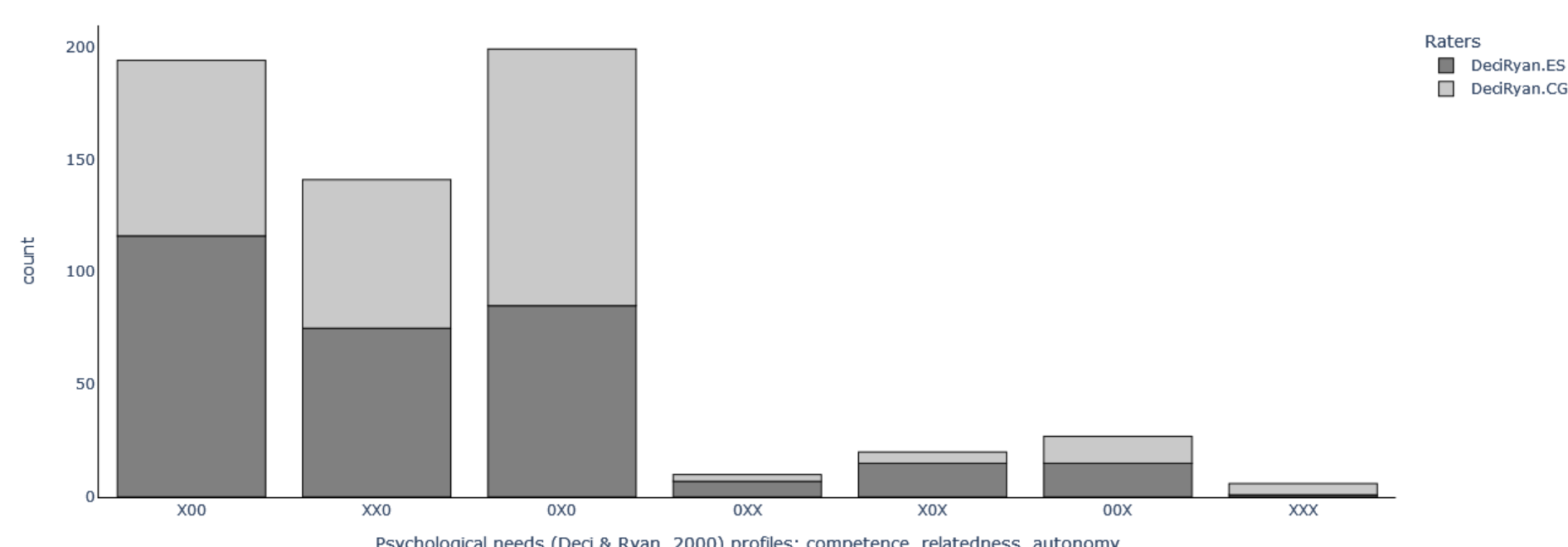

Figure 4. Bar chart of psychological need (Deci & Ryan, 2000) profiles scored by the raters ES and CG. Profile codes: X00=competence; XX0=competence, relatedness; 0X0=relatedness; 0XX=relatedness, autonomy; X0X=competence, autonomy; 00X=autonomy; XXX=competence, relatedness, autonomy.

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Gamification & Psychological Needs

Gamification hexad user types.
During the development of the rallye we incorporated gamification elements. We matched those gamifications element to the six different user types and their motivation according to Marczewski's (2015) gamification hexad user type framework (figure 2). As we found elements for each type, we expected to have all user types represented amongst participants.

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Figure 2: Gamification Hexad User Types (Marczewski, 2015)

Basic psychological needs (Self-determination theory). Furthermore, we wanted to explore to what extend basic psychological needs according to Deci & Ryan's self-determination theory (2000) is displayed in the feedback. The self-determination theory states that there are fundamental psychological needs that must be met in order for people to consistently grow, experience wellbeing and integrity – specifically the needs for competence, autonomy, and relatedness.

Table 1: Interrater agreement

	User Types		Psychological needs		
		Profiles	Competence	Relatedness	Autonomy
Raters	ES, SH	ES, CG	ES, CG	ES, CG	ES, CG
Sample size [a]	n=314	n=250			
Cohens Kappa (K)	0.5288	0.5882	0.5997	0.7214	0.5977
Confidence Interval 95%	(0.4735, 0.5841)	(0.5270, 0.6493)	(0.5388, 0.6606)	(0.6657, 0.7771)	(0.5368, 0.6586)
Interrater agreement [b]	Moderate	Moderate	Moderate	Substantial	Moderate

[a] sample excludes all individuals that were typed as "NaN" by both raters
[b] Categories according to Landis & Koch (1977): K <0.00: Poor, 0.00-0.20: Slight, 0.21-0.40: Fair, 0.41-0.60: Moderate, 0.61-0.80: Substantial, 0.81-1: Almost Perfect

Discussion

Moderate interrater agreement. -> Feedback questions were very broad. Also some motivations might have been easier to score than others. We received 60.7 % student feedback, however, missing types might be among individuals that gave no feedback. User types: always a mix of types, which makes rating difficult. Find out: How validated is the user types framework?

Competence and relatedness were a strong motive in feedback. Rallye is extracurricular offer -> might attract individuals with high achieving tendencies. Data Awareness Rallye was developed and offered during Covid-19 pandemic. -> strong pull towards offers that support building connections among students.

Underrepresentation of certain user types and psychological needs. Gamification might not be appealing to all. "Autonomy" is not highly represented.-> offer might be not attractive to students with strong autonomy motive.

Is it really fun? Next steps

We need better questions: new questionnaire? How can we improve our offer to reach other types? **We are looking forward to go into discussion with you and form hypotheses for further research.**