

Personalised Self-regulated Learning with a Checklist in Secondary Education

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### Abstract

There is a demand for a persons' ability to continuously self-refine skills, both after and during school. Students' self-regulated learning (SRL) skills are not acquired automatically but have to be trained. It remains unclear, however, what the most optimal instructional design (ID) for such a training would be. Scholars focused on a one-size-fits-all ID approach instead of a customised ID approach, though customised approaches benefit learners more in general. Therefore, this study examined whether applying a customised ID approach, in the form of personalisation, might benefit SRL skill acquisition. The sample included 48 Dutch first-year secondary school students in geography classrooms. Participants were randomly assigned to one of the three conditions: personalised SRL instruction, non-personalised SRL instruction or no SRL instruction. A pretest-posttest measured SRL skill acquisition. An intervention was provided with a checklist that contained five up to twelve questions and consisted of 3 minutes per class over four classes. The results show that a personalised intervention with a checklist in secondary education did not significantly improve students' SRL skills more than a non-personalised SRL intervention or no SRL instruction. In conclusion, the personalised ID approach in this study did not enhance instructional efficiency for teaching SRL skills.

*Keywords:* self-regulated learning, customised instructional design, personalisation, checklist

### Personalised Self-regulated Learning with a Checklist in Secondary Education

There is a demand for a persons' ability to continuously self-refine skills, both after and during school (Zimmerman, 2002). After a student has obtained his or her diploma, learning at the workplace mostly will take place informally. This informal type of learning appeals to the learners' independence. Likewise, during their education, an essential skill for students is their ability to self-generate and self-monitor their thoughts, feelings, and behaviours to reach a goal, or in other words to self-regulate their learning (Santrock, 2018). Mastering self-regulated learning (SRL) skills benefits students across a wide range of ages. Self-regulated learners tend to achieve higher learning outcomes (e.g., Wolters, 2010), and are less likely to drop out of school (Wang & Fredricks, 2014) compared to students with less developed SRL skills. SRL skills help teenagers deal with increased independence in secondary education and cope with change during the transition of secondary education to higher education (De Boer, Donker-Bergstra, & Kostons, 2012).

SRL skills are not acquired effortlessly and have to be taught. Education plays a substantial role in teaching SRL skills to students (Zimmerman, 2002). However, what the most optimal instructional design is to teach SRL skills remains unclear. Scholars focused on a one-size-fits-all approach but considering the benefits of customised approaches on learners (e.g., Corbalan, Kester, & Van Merriënboer, 2006), it is worthwhile to examine whether applying customised design approach might benefit SRL skill acquisition.

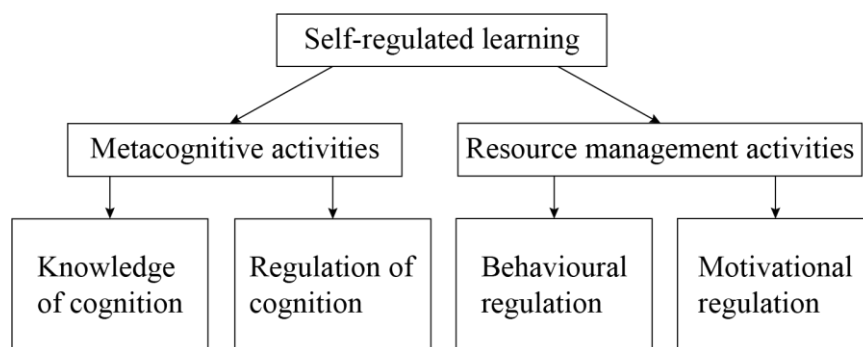
With a demand for students' ability to self-regulate their learning and a need for instruction to teach them how to gain and develop this skill, knowledge about how SRL instruction can be optimised is required. This study aims to provide more clarity about a customised ID approach called personalisation, in acquiring SRL skills in secondary education.

### **Theoretical framework**

## Self-regulated Learning

SRL is not simply *one* skill a learner does or does not possess (Zimmerman, 2002). Rather, SRL involves several self-regulatory processes that require different skills. The structure of these self-regulatory processes is often depicted as cyclical and consists of three phases: a preparatory, a performance and an appraisal phase (Puustinen & Pulkkinen, 2001). In the preparatory phase, learners prepare for the task at hand by planning and setting goals. During the performance phase, learners monitor their learning, regulate learning strategies, use cognitive strategies for learning the material and allocate resources (such as time and help). Lastly, in the appraisal phase, learners reflect on their learning by asking questions such as: ‘What learning strategy was effective?’ and ‘What can I do differently next time to improve my learning?’ Due to the cyclical character of SRL, the output of this last phase provides input for a new SRL cycle (Puustinen & Pulkkinen, 2001).

During these three phases, learners undertake different activities (see Figure 1). SRL is an umbrella term that encompasses metacognitive activities and resource management activities (Pintrich, 1999). Subsequently, these two activities can be subdivided into two parts.



*Figure 1.* Schematic overview of self-regulated learning and the activities SRL encompasses.

Adapted from “Self-regulated learning partially mediates the effect of self-regulated learning interventions on achievement in higher education: A meta-analysis”, by R. S. Jansen, A. Van Leeuwen, J. Janssen, S. Jak, and L. Kester, 2019, *Educational Research Review*, 28, p.

100292.

Metacognitive activities enhance learning through the use of learning strategies (Zimmerman, 1990). The metacognitive activities can be separated into the *knowledge of cognition* and *regulation of cognition*. *Knowledge of cognition* represents the understanding of one's process of learning and contains knowing that (declarative), knowing how (procedural) and knowing when (conditional) knowledge of cognition (Follmer & Sperling, 2016). *Regulation of cognition* includes controlling someone's cognitive processes, for example, monitoring and predicting. Resource management activities are composed of *behavioural regulation* (learning environment, e.g. studying in a quiet room instead of a noisy one) and *motivational regulation*. The latter incorporates persistence when motivation declines (Jansen, Van Leeuwen, Janssen, Jak, & Kester, 2019)

### **Acquisition of SRL Skills**

**Value.** Acquiring SRL skills is valuable because it enhances students' academic performance across a wide range of ages, including secondary education (e.g., Dent & Koenka, 2016). Besides, modern instruction in primary and secondary education concentrates on higher-order thinking skills (learning processes and skills for getting new knowledge) contrary to basic skills and vast bulks of information (National Research Council, 2011). Learners, in secondary education, have to deal with increased autonomy and seem to miss the necessary SRL strategies (De Boer et al., 2012). Besides, it is unlikely that those learners develop effective learning strategies independently and without instruction (De Boer et al. 2012). Due to a lack of knowledge and skills, a vast number of learners' SRL skills, from a broad range of ages, are not optimal (Trevors, Feyzi-Behnagh, Azevedo, & Bouche, 2016). SRL skills develop and get more refined across childhood and adolescence (Dent & Koenka, 2016; Zimmerman & Martinez-Pons, 1990). It requires conscious effort to use learning strategies (i.e., how-to-knowledge; De Boer et al., 2012).

**SRL teaching methods.** Self-regulatory processes can be taught through instruction and learned through modelling by teachers or peers (Zimmerman, 2002). Other ways to acquire SRL skills in the context of higher education are prompting learners to engage in SRL activities (e.g., Berthold, Knückles, & Renkl, 2007; Moos & Blonde, 2016). The meta-analysis from De Boer et al. (2012) provided an overview of effective strategies for teaching SRL in primary and secondary education. In their research, grades ranged from Grade 2 up to Grade 11, with a mean grade of 6.4. To teach SRL skills to learners de Boer et al. (2012) recommended three strategies. First, general metacognitive knowledge: teaching students how, when and why to apply learning strategies. Second, the metacognitive strategy ‘planning and prediction’. Students defined how they are going to perform a task and what was needed to execute their tasks well. Third, the motivational strategy called ‘task value’, to stimulate learners’ beliefs that a task is relevant and important.

Training the SRL skills of secondary school students is useful, and especially interventions focused on metacognitive strategies were effective (Dignath & Büttner, 2008). Unlike primary school students, students in secondary school already possess learning strategies. Therefore, stressing metacognitive aspects can be useful for the latter. Hence, young children need more support and benefit more from explicit SRL instruction, whereas older children benefit more from the application of learning strategies.

**SRL interventions with a checklist.** A checklist is a method to translate the aforementioned SRL acquisition strategies into concrete actions that learners perform in the classroom. A checklist contains questions that a student ticks with ‘yes’ or ‘no’. Checklists are similar to prompts. Prompts ask questions or provide hints that activate useful learning processes (Berthold et al., 2007). Prompts help learners develop valid cues which impact SRL acquisition (Van Merriënboer & Kirschner, 2018). Since prompts mostly get implemented in

the learning task realising such SRL interventions can be time-consuming. Conversely, a checklist can be used isolated from the learning task and can be applied in multiple contexts.

A checklist is also similar to a process worksheet with guiding questions, a guide assisting learners with problem-solving. Process worksheets support SRL skill acquisition (Brand-Gruwel, Kester, Kicken, & Kirschner, 2013). By posing questions, the process worksheet indicates the various problem-solving stages and benefits learners because it elicits them to think about the problem-solving steps (Van Merriënboer & Kirschner, 2018). This principle applies to a checklist too, and it can be a helpful tool to raise learners' awareness of learning processes and learners' SRL skills. A checklist supports learners by showing which different components of a task to be included (Rowlands, 2007). Likewise, a checklist provides cues to the learners of what kind of steps to take, thereby scaffolding the internalisation of new processes. Besides, checklists are flexible and can easily be personalised (Rowlands, 2007).

Ness and Middleton (2012) proposed an individualised framework using a checklist for enhancing SRL. In this framework, students' individual learning challenges in sixth grade were pre-measured, whereafter students used an individualised instruction checklist called MARS (Materials, Anticipate, Ready to learn, Stay on task). The framework was demonstrated by a case study. A special education teacher implemented the checklist for a student with a learning disability and gave one-on-one guidance. The teacher taught the student how to use the checklist, solicited the student to complete the checklist before his math class (check-in) and promoted student' self-evaluation after the class (check-out). Results showed improvements in individual learning challenges which resulted in increased grades and increased in-class teacher-perceived engagement. This outcome sounds promising. Nevertheless, the impact of this study is limited, since it illustrated the framework with a one-sample case which makes generalisation of the findings hard.

### **A Customised Instructional Design Approach and SRL**

Although different methods for SRL skill acquisition exist, they tend to focus on a one-size-fits-all approach instead of a customised instructional design (ID) approach. This approach does not take students' differences into account concerning their skills and interests. That seems unfortunate because the level of efficiency in the use of SRL varies largely between learners (Zimmerman & Martinez-Pons, 1990). Kostons, Donker-Bergstra and Opdenakker (2014) found that taking the level and age of the learner into account determined the effectiveness of the SRL instruction. In addition, they stated that it is likely that, within a class, students have different needs for SRL instruction (Kostons et al., 2014). Moreover, one-size-fits-all approaches can harm students in secondary education and cause study delay, therefore increasing costs and demotivating students (Keefe, 2017). Customised ID approaches, however, have shown to affect domain-specific learning positively in contrast to a one-size-fits-all curriculum (e.g., Corbalan, Kester, & Van Merriënboer, 2006).

The current study focused on a type of customised ID approach called personalisation. Personalisation is a relatively dynamic approach, with a shared responsibility between learners and teachers for the learning process (Patrick, Kennedy, & Powel, 2013). The goals and means of learning are chosen by students and supported by the teacher (Halverson et al., 2015). Personalisation is likely to influence learners' motivation as it meets the students' needs of autonomy and competence, as indicated in the self-determination theory (Ryan & Deci, 2000). Personalisation provides learners with control over their learning process. Hence, meeting learners' basic need for autonomy. Likewise, learners receive instruction at their level, which meets their basic need for competence.

**What is the effect of personalisation on SRL?** Personalisation of learning materials allows teachers to teach students at their level of difficulty. In this way, teachers can provide learners with the right amount of support which prevents cognitive overload (Corbalan et al.,



2006). A select type of personalisation called shared control (teacher and learner both responsible for learning) is believed to foster the progress of self-regulation skills (Corbalan et al., 2006). Giving students control over their learning, empowers them to express and develop SRL skills. Admiraal et al. (2018) found that shared control learning interventions with learner-control on surface aspects (e.g., pacing, sequencing) appeared to increase secondary school students' achievement. Concerning students' SRL, no clear conclusion was found. A possible reason for this lack of clarity was that the interventions in the study concentrated excessively on either teacher- or learner-control. Besides, the interventions were not explicitly meant to increase students' SRL skills. Admiraal et al. (2018) suggested that an intervention addressing SRL skills of students might lead to more positive effects. The already mentioned study by Ness and Middleton (2012) seems to be the only one who implemented a personalised ID approach for SRL.

### **Present Study**

So far, it is unclear if personalisation positively influences SRL skill acquisition. This research aims to provide more clarity about a personalised ID approach by investigating the following question: What is the effect of a personalised instructional design approach with a checklist on SRL for secondary school students in the Netherlands? It is expected that a personalised approach is beneficial for SRL skill acquisition, because personalised ID approaches work well for acquiring domain-specific skills and because the first results using a personalised checklist were promising. This expectation leads to hypothesis 1: personalised SRL instruction with a checklist results in better SRL skills than an instruction with a checklist that is not personalised. Likewise, this results in hypothesis 2: personalised and not personalised instruction with a checklist result in better SRL skills than no SRL instruction.

In this study, the results and implications of an SRL intervention are presented. The research question is examined via a three-stage plan. It starts with exploring participants' self-

reported SRL state. Secondly, by zooming in on personalisation by investigating its influence on participants' SRL skills. Thirdly, to perpetuate the results of the second stage attention is paid to the materials participants filled in during the intervention.

## **Method**

### **Research Design**

This study consisted of an experiment with a pretest-posttest (SRL skills), yoked control design with a control group. Participants were randomly assigned to one of the three conditions: personalised, yoked and control. In the personalised condition, students received personalised support for SRL based on their current SRL state. In the second condition, participants were joined together with participants from the first condition (i.e., yoked control design; Oxford Reference, 2019). This means that participant A from the yoked condition received the same, identical instrument as participant A from the personalised condition. So, the participants in the yoked condition received SRL support. However, this SRL support was not based on their current SRL state and therefore not personalised. The yoked design acted as a baseline to relate personalisation to. The baseline made it possible to examine whether personalisation affects SRL acquisition or not. Lastly, participants in the control condition acted as a control group for the effect of the SRL. They received a non-personalised and not SRL supported instruction concerning the topic of emotions while studying.

### **Participants**

Before conducting the study, a priori analysis was performed with the program G\*Power version 3.1.9.4 to determine the required sample size. Based on an effect size of self-regulation strategies Cohen's  $d = 0.52$  (Hattie, 2017) and a power of 0.80, a repeated measures ANOVA indicated a total sample size of  $n = 111$ .

The selection of participants ( $N = 118$ , 66 male, 52 female,  $M_{age} = 12.36$  years, min-max: 11 - 14 years) took place through convenience sampling. All participants were first-year

secondary school students from the Netherlands, which is similar to the seventh grade in the United States. Participants' level of education was higher general secondary education (havo), a combination of higher general secondary education and pre-university education (havo-vwo) and pre-university education (vwo). Higher general secondary education and pre-university education are in the Dutch school system the two highest levels in secondary school. Due to the coronavirus disease (COVID-19), this study suffered from missing values downsizing the sample size. The personalised condition included  $n = 12$  students, the yoked condition  $n = 11$ , and the control condition  $n = 15$ . The research took place in a geography course which ran twice a week with classes of 50 minutes.

### **Instruments**

**Adjusted SOL-Q-R.** The participants filled in an adjusted version of the Self-regulated Online Learning Questionnaire Revisited (SOL-Q-R) (Jansen, Van Leeuwen, Janssen, & Kester, 2018; Appendix A) to measure their current SRL state and their state after the intervention. The SOL-Q-R was adjusted by translating the items to Dutch. Changes incorporated replacing the words 'online course' into 'geography'. To improve face validity, a geography teacher evaluated the questionnaire. Words or phrases that the geography teacher and researcher expected to be too complicated for the learners were simplified. For example, "I am aware of the strategies I use when I study for geography" became "I am aware of the way of learning I use when I study for geography".

The adjusted SOL-Q-R consisted of 42 items with a 7-point Likert scale ranging from "not all true for me" (=1) to "very true for me" (=7). The questionnaire contained seven scales: metacognitive activities before learning, metacognitive activities during learning, metacognitive activities after learning, time management, environmental structuring, persistence and help-seeking. The scales of the adjusted SOL-Q-R were reliable (Table 1) and similar to the reliabilities by Jansen et al. (2018) who indicated the reliability (above .68 for

all subscales), validity and usability of the SOL-Q-R as good. In this research, a Cronbach's Alpha with a value equal to or higher than .70 was considered as reliable (Taber, 2016). The scales of time management and environmental structuring were just below the reliability value. Therefore, caution must be applied to the results.

Table 1

*Reliability of the Adjusted SOL-Q-R Scales Pretest*

| Scale                                    | <i>n</i> | <i>Items</i> | $\alpha$ |
|--|----------|--------------|----------|
| Metacognitive activities before learning | 117      | 7            | .75      |
| Metacognitive activities during learning | 116      | 7            | .73      |
| Metacognitive activities after learning  | 117      | 6            | .79      |
| Persistence                              | 116      | 7            | .83      |
| Help-seeking                             | 117      | 6            | .77      |
| Time management                          | 116      | 5            | .65      |
| Environmental Structuring                | 118      | 4            | .67      |

**Checklists.**

**SRL checklist.** Participants of the personalised and yoked condition used the SRL checklist as a tool for studying and filled in the list during each class (see Figure 2). The goal of the SRL checklist was to create awareness among the learners about SRL to improve their SRL skills. Since no fully developed SRL checklist was available, the SRL checklists (see Appendix B) were derived from a combination of two different sources: SRL strategies (Zimmerman & Martinez-Pons, 1986), and SOL-Q-R (Jansen et al., 2018). Each checklist represented one of the seven scales of the SOL-Q-R. To illustrate: the first type of checklist (1) only concerned metacognitive activities before learning, the second type (2) metacognitive

activities during learning, and so forth. Therefore, a total of seven different types of SRL checklists were provided. At the top of each checklist, a description informed the participants of the relevance to develop and master a specific SRL scale. The description was used to engage and motivate the learner and to stimulate curiosity for SRL. Each checklist consisted of a list of questions (range 5-12). Participants indicated a ‘yes’ or ‘no’ in the checkbox for each question. The left part of the checklist contained questions participants should respond to referring to the context ‘outside of class’ (e.g., while doing homework at home). Questions on the right part of the checklist related to the context ‘today during this class’. Participants answered these questions about the geography lesson they currently followed.

## Persistence

The advantage of persistence is that you are more likely to finish school and not having to repeat a grade. Your level of persistence is a good predictor for your grades.

Outside of class

Below are some questions about how you worked outside of class, for example at home.

- |  | Yes                      | No                       |
|--|--------------------------|--------------------------|
| Have I forced myself to work for geography (taking assignments or learning for the test), even when I was feeling bored? | <input type="checkbox"/> | <input type="checkbox"/> |
| Have I made an effort when my mind wandered off while doing my geography homework to stay focused?                       | <input type="checkbox"/> | <input type="checkbox"/> |
| Have I increased my focus by thinking about why I'm committed to geography?  | <input type="checkbox"/> | <input type="checkbox"/> |
| Have I rewarded myself when I finished my geography homework (e.g., Netflix or gaming)?                                  | <input type="checkbox"/> | <input type="checkbox"/> |

Alias: \_\_\_\_\_

Date: \_\_\_-03-2020

Today during this class

Below are some questions about how you worked during today's class.

- |   | Yes                      | No                       |
|---|--------------------------|--------------------------|
| Have I forced myself to pay attention to the geography lesson, even when I was feeling bored? | <input type="checkbox"/> | <input type="checkbox"/> |
| Have I kept going despite that the assignment was (sometimes) difficult?                      | <input type="checkbox"/> | <input type="checkbox"/> |
| Have I increased my focus by taking notes during the geography lesson?                        | <input type="checkbox"/> | <input type="checkbox"/> |



*Figure 2.* An example of a checklist concerning the SRL scale persistence. This checklist example was translated from Dutch into English.

During the third lesson, each checklist contained an additional part: “Pay attention new!”. Participants instruction read: “choose a question (from numbers 1 to X) about which you want to receive a tip in the next lesson. Circle the number of the question (please circle no more than 1 number!)”. In other words, the participants could choose one question on which they would like to receive a tip (Appendix C).

The checklist in lesson four provided a tip to the learners (Appendix D). Participants in the personalised condition received a tip about the question they selected at checklist three. In the yoked condition, participants received a tip from the participant they were paired with from the personalised construction (yoked design). In total, participants received four checklists.

***Emotion checklist.*** Additionally, for the control group, an eighth checklist concerning ‘emotions experienced while studying’ was made, consisting of ten questions. The emotion checklist was the same as the SRL checklist, except for the type of questions provided. The questions for the checklist were based on an adjusted version of the Emotions Questionnaire (Clark & Saxberg, 2018). This questionnaire was chosen as the topic concerned ‘emotions experienced while studying’ which was non-related to SRL but related to studying. The latter was required to prevail students from noticing that they participated in a control condition. The tip that participants in the control condition received on the fourth checklist was based on the question they selected at checklist three.

## **Procedure**

Parental informed consent was handed out two weeks before the experiment via the participants to their parents. The experiment took place in the students’ classroom. During the first day of the experiment, the researcher was present. Participants got the possibility to ask questions, signed informed consent and completed the adapted version of the SOL-Q-R (pretest SRL), which took altogether about 15 minutes. To ensure anonymity, the teacher

appointed each participant to their unique alias from a predefined list with aliases (names of cities, e.g., Berlin). The teacher managed the list of names and aliases to ensure continuity during the experiment, which means that a participant who forgot his or her alias could ask the teacher for it. The participants filled in the questionnaire on their mobile phone or laptop in the program Qualtrics. The items were randomly presented. The questionnaire collected demographic information concerning gender and age.

Personalisation was operationalised by selecting the scale for the checklist for the personalised condition based on participants' score on the SOL-Q-R. Which scale a participant received was determined by calculating participants' average score of each of the seven separate scales of the adjusted SOL-Q-R. The scale where the participant relatively scored the lowest (1 = low and 7 = high on the Likert scale continuum) was selected for the personalised checklist. This scale was used throughout the entire intervention.

During the two intervention weeks, participants of all three conditions filled in a checklist during each lesson which took around 3 minutes per lesson. In total, there were four lessons. During the third lesson, participants chose one question from the checklist about which they wanted to receive a tip in the next lesson. In the fourth lesson, the personalised and control condition obtained a personal tip. The yoked condition received a tip as well, but this tip came from the checklist item indicated by the participant they were paired with from the personalised condition.

After the intervention, participants filled in the adapted SOL-Q-R once more (posttest SRL). The geography teacher sent a link to the posttest to all participants via email, one week after they completed the last checklist. The teacher sent two reminders to the students to fill in the posttest. The first reminder was sent to all participants, and the second one to specific students who had not partaken yet. The students were allowed to fill in the questionnaire up to and including 12 days. After that, the survey was closed.

## Data Analyses

SPSS version 25 was used to analyse the data, using a p-value of .05. A repeated-measures ANOVA with pretest-posttest data was conducted to compare the three groups, with SRL being the dependent variable and condition (personalised, yoked, control) the independent variable. Post hoc pairwise comparisons were used to explore differences between the means only if the F-test was significant.

## Results

The results section is divided into three sub-sections. First, an overview of the state of affairs concerning the SRL skills of the participants will be provided based on the analysis of the SOL-Q-R. Second, the results of the study will be presented, looking at the influence of personalisation on SRL. The third section offers an in-depth view of the intervention. It will provide highlights of how participants filled in the checklist, as this contributes to a better understanding of the results of the study.

### SRL State of First-year Students at Secondary School

First, Pearson correlations were examined between SRL and age, gender and school level. No significant relation between the variables was found,  $r = -.05$  (SRL and age),  $r = .04$  (SRL and gender),  $r = -.01$  (SRL and school level). Since the correlations were close to zero, this indicated no linear relationship (Field, 2018). Therefore, age and gender did not influence the independent and dependent variables.

A total of 179 students were invited to participate (response rate, 66%). Some of these students did not receive parental permission to participate. Others forgot to hand in the signed parental informed consent or were absent during the start of the experiment. Descriptive statistics in Table 2 show the self-reported state of SRL amongst students ( $N = 118$ ). The mean for SRL showed that students indicated their SRL capabilities more towards the “very true for me” than “not at all true to me” end of the 7-point Likert continuum. The SRL scale



with the highest mean of the seven SRL scales was time management, indicating that students perceive that they apply this scale the most. The mean of the scale metacognitive activities after learning was the lowest, which indicated that students found that they apply this SRL scale the least of all seven scales.

Table 2

*Mean and Standard Deviation for the Adjusted SOL-Q-R*

| Scale                                    | <i>n</i> | <i>M</i> | <i>SD</i> | Min  | Max  |
|--|----------|----------|-----------|------|------|
| Metacognitive activities before learning | 118      | 4.25     | 1.02      | 1.00 | 6.43 |
| Metacognitive activities during learning | 118      | 4.85     | 0.91      | 2.29 | 6.86 |
| Metacognitive activities after learning  | 118      | 3.97     | 1.19      | 1.00 | 6.33 |
| Persistence                              | 118      | 4.79     | 1.05      | 1.86 | 7.00 |
| Help-seeking                             | 118      | 4.95     | 1.05      | 1.33 | 6.83 |
| Time management                          | 118      | 4.97     | 0.97      | 1.60 | 7.00 |
| Environmental structuring                | 118      | 5.39     | 1.11      | 2.00 | 7.00 |
| Self-regulated learning                  | 118      | 4.74     | 0.74      | 2.22 | 6.45 |

*Note.* The minimum score was 1, and the maximum score was 7, based on the 7-point Likert scale.

**Effect of Personalisation on Students' Self-reported SRL**

Due to the COVID-19, this study suffered from missing data. From the 118 participants, 70 were not able to partake in the intervention sessions and the posttest. Eight participants did not fill out the posttest, and two only filled in two of the intended four checklists. All 80 missing values were left out of the repeated measure ANOVA analysis. The distribution of the conditions of the remaining sample was personalised ( $n = 12$ ), yoked ( $n =$

11) and control ( $n = 15$ ). One part of the participants ( $n = 13$ ) finished the entire experiment. The other part of the students ( $n = 25$ ) completed the experiment, except for checklist 4. Five outliers were detected in the pretest (personalised 1, yoked 1 and control 3) and one in the posttest (yoked 1). However, no reasons were found to remove the outliers from the data.

The assumption of homogeneity of variance has been met. For the SRL pretest and posttest score, the variances of the conditions were not significantly different, respectively  $F(2, 35) = 0.425, p = .657$  and  $F(2, 35) = 0.551, p = .581$ . The Shapiro-Wilk test (SW-test) indicated that the variables of the SRL pretest and post are not normally distributed  $D_{\text{pretest}}(38) = .927, p = .017$  and  $D_{\text{posttest}}(38) = .913, p = .006$ . However, normality of the data were not violated observing skewness (-0.940, -1.015) and kurtosis (0.739, 0.789), since values for skewness and kurtosis between -1.96 and +1.96 were advised acceptable to demonstrate normal distribution (George & Mallery, 2010). Likewise, according to the central limit theorem, normality can be assumed with a sample size of 30 or more regardless of the shape of the sample data (Field, 2018). Therefore, the SW-test was refuted, and the assumption of normality was met.

There was a significant difference between the SRL pretest and posttest,  $F(1, 35) = 10.22, p = .003, \eta_p^2 = .23$ . Meaning that the self-reported SRL of the participants significantly differed before and after the intervention. Further, the effect size suggested a large effect (Cohen, 1969). A post hoc pairwise comparison using the Bonferroni correction showed an increased SRL mean score between the pre- and posttest ( $M = 4.83$  vs.  $M = 5.06$ , respectively) that was statistically significant,  $p = .001$ . Suggesting an improvement in participants' SRL skills over time. There was no significant interaction between time and condition,  $F(2, 35) = 1.05, p = .361, \eta_p^2 = .06$ . Meaning that the three conditions did not differ significantly on SRL development. Moreover, the partial eta squared suggested a medium effect (Cohen, 1969). The mean scores of the personalised condition (Table 3) increased most over time (0.31),

more than for the yoked (0.08) and the control condition (0.28). These scores indicated an absolute growth in SRL for the personalised and control condition and negligible growth in SRL for the yoked condition.

As the intervention focused at only *one* SRL scale instead of all seven, it was considered worthwhile to calculate participants' mean progress concerning the scale on which they received a checklist. For the personalised condition, the mean progress was 0.75, whereas the mean progress for the yoked condition was 0.16. Indicating a larger difference between the conditions than when focussing on SRL in total.

During the posttest, 69.2% of the participants answered the question: "Did you use the tip provided with checklist 4?" with 'yes' and 30.8% with 'no'. The frequencies were personalised: 4/4 (100%), yoked 2/3 (66.7%) and control 3/6 (50%).

Table 3

*Mean, Standard Deviation for the Pretest and Posttest per Scale in Three Conditions and Difference between the Means from the Pre- and Posttest*

| Condition    | Scale                     | <i>n</i> | Pretest<br><i>M(SD)</i> | Posttest<br><i>M(SD)</i> | $\Delta$ prepost |
|--------------|---------------------------|----------|-------------------------|--------------------------|------------------|
| Personalised | MC activities before      | 12       | 4.54 (0.90)             | 4.86(0.89)               | 0.32             |
|              | MC activities during      | 12       | 4.99(0.51)              | 5.18(0.99)               | 0.19             |
|              | MC activities after       | 12       | 4.06(1.28)              | 4.47(1.05)               | 0.41             |
|              | Persistence               | 12       | 5.03(0.86)              | 5.52(0.97)               | 0.49             |
|              | Help-seeking              | 12       | 4.82(1.07)              | 5.26(1.20)               | 0.44             |
|              | Time management           | 12       | 5.44(0.80)              | 5.52(0.76)               | 0.08             |
|              | Environmental structuring | 12       | 5.56(0.93)              | 5.88(0.87)               | 0.32             |
|              | SRL total                 | 12       | 4.92(0.59)              | 5.23(0.68)               | 0.31             |

| Condition | Scale                     | <i>n</i> | Pretest      | Posttest     | $\Delta$ prepost |
|-----------|---------------------------|----------|--------------|--------------|------------------|
|           |                           |          | <i>M(SD)</i> | <i>M(SD)</i> |                  |
| Yoked     | MC activities before      | 11       | 4.18(0.93)   | 4.38(1.10)   | 0.20             |
|           | MC activities during      | 11       | 4.91(0.82)   | 4.75(0.99)   | -0.16            |
|           | MC activities after       | 11       | 4.24(1.12)   | 4.26(1.31)   | 0.02             |
|           | Persistence               | 11       | 4.94(1.23)   | 5.27(1.07)   | 0.33             |
|           | Help-seeking              | 11       | 4.89(1.21)   | 4.70(0.73)   | -0.19            |
|           | Time management           | 11       | 5.04(0.81)   | 5.25(0.90)   | 0.21             |
|           | Environmental structuring | 11       | 5.36(1.27)   | 5.48(1.52)   | 0.12             |
|           | SRL total                 | 11       | 4.79(0.90)   | 4.87(0.90)   | 0.08             |
| Control   | MC activities before      | 15       | 4.42(1.20)   | 4.63(1.14)   | 0.21             |
|           | MC activities during      | 15       | 4.70(0.96)   | 4.93(0.74)   | 0.23             |
|           | MC activities after       | 15       | 4.12(1.32)   | 4.21(1.19)   | 0.09             |
|           | Persistence               | 15       | 4.94(1.18)   | 5.36(0.72)   | 0.42             |
|           | Help-seeking              | 15       | 5.01(0.67)   | 5.27(0.89)   | 0.26             |
|           | Time management           | 15       | 5.07(0.75)   | 5.33(0.75)   | 0.26             |
|           | Environmental structuring | 15       | 4.82(1.02)   | 5.52(0.87)   | 0.70             |
|           | SRL total                 | 15       | 4.72(0.67)   | 5.00(0.63)   | 0.28             |

*Note.* MC is the abbreviation for metacognitive.  $\Delta$ prepost = mean posttest minus mean pretest.

### Checklists

Descriptive statistics were examined for all filled in checklists from the personalised and yoked condition to investigate the effect of the intervention on the application of participants' SRL skills over time. There was checked whether differences arose in the weeks

with filling in the checklists (e.g., did participants apply SRL more often or not?). The control condition was not reported because it provided no information about SRL and was therefore considered out of the scope of this research. Table 4 gives an overview of the percentage of participants who ticked ‘yes’ on a checklist. One outlier was detected: the participant ticked ‘no’ as an answer for all questions on each subsequent checklist. The outlier was kept in the dataset because results from the pretest-posttest displayed no abnormal picture ( $M_{pretest} = 4.34$ ,  $M_{posttest} = 4.43$ ). Although this participant may not have completed the checklist in all seriousness, this cannot be said with certainty, and SRL awareness could have been created.

Table 4

*Percentage of Participants who Ticked ‘Yes’ on the Checklists per Scale*

| Scale                     | Checklist 1 (n) | Checklist 2 (n) | Checklist 3 (n) | Checklist 4 (n) | Mean |
|---------------------------|-----------------|-----------------|-----------------|-----------------|------|
| MC activities before      | 69% (8)         | 69% (8)         | 58% (8)         | 56% (3)         | 63%  |
| MC activities after       | 44% (10)        | 45% (9)         | 45% (10)        | 48% (4)         | 46%  |
| Persistence               | 79% (2)         | 57% (1)         | 79% (2)         | 100% (2)        | 79%  |
| Help-seeking              | 56% (5)         | 60% (6)         | 50% (6)         | 80% (1)         | 62%  |
| Time management           | 92% (2)         | 92% (2)         | 100% (2)        | % (0)           | 94%  |
| Environmental structuring | 43% (2)         | 43% (2)         | 71% (2)         | 43% (1)         | 50%  |

*Note.* MC is the abbreviation for metacognitive.

The scale of the checklist on which participants ticked most ‘no’ as an answer was metacognitive activities after learning. Only 46% of the answers were indicated as ‘yes’; therefore, 54% of the answers were indicated with ‘no’. Participants indicated applying these SRL actions the least. The question with the least answered ‘yes’ (25%) was “When I finished making my geography homework (taking assignments or learning for the test), did I ask

myself if I have achieved my goal?”. Followed by the questions (27%) “Have I thought about what I can improve when doing my homework?” and “Have I considered whether today's curriculum could be used in other situations?” (30%). The checklists with most ‘yes’ as an answer, were time management (94%) and persistence (79%). However, these two checklists were filled in each by only  $n = 2$  participants and therefore should be interpreted with caution. No pattern in the amount of ‘yes’ or ‘no’ ticked by participants was observed during the time.

In total, 11 participants answered the question at checklist 4, “Is the tip you received useful for you?”. Nine participants chose ‘yes’, and two participants chose ‘no’, which indicates that most students (82%) found their tip useful. Likewise, at checklist 4, participants answered the question: “Are you going to use this tip?”. In the personalised condition, four out of six of the students (67%) indicated ‘yes’ and in the yoked condition three out of four (75%). Some participants seemed convinced of why they would use this tip (e.g., “because now I have a step-by-step plan”, “because there are learning tips on them and I find that useful”, and “yes, but most things I already do”). Others appeared not to be convinced (e.g., “I think so, but I am not sure”, and “I hope it works”). Explanations of why participants stated not to use the tip were, “because I don’t care” and “No, I never filled that in?”. To conclude, the tips used in this intervention appeared to be perceived as useful by participants of the personalised and yoked condition.

### **Discussion**

The present study investigated the effect of a personalised ID approach with a checklist on SRL for secondary school students in the Netherlands. Students benefit from mastering SRL skills at school and during their life. SRL skills need to be trained, and insight into a personalised ID approach could improve the teaching of SRL skills. Contrary to the expectations, no compelling evidence was found that students who received a personalised

checklist significantly differed from the yoked and control condition on their improvement on SRL skills.

The first hypothesis assumed that personalised instruction resulted in better SRL skills than an instruction that was not personalised. The supposition was not supported. This result may be explained by the fact that the self-reported questionnaire (pretest) that participants filled in may have functioned as a self-assessment intervention. This self-assessment might explain why, in general, students self-reported SRL scores improved significantly over time. Panadero, Jonsson and Botella (2017) suggested that self-assessment interventions may have a positive influence on students' SRL. It seems plausible that the groups did not differ significantly in their indicated SRL at the posttest due to their self-assessment. In addition, the finding was inconsistent with previous research by Ness and Middleton (2012), where individualised SRL strategies enhanced self-regulated processes. The current study differed from Ness and Middleton's as participants spent less time on the checklist (3 minutes per class compared to 15 minutes, respectively). Moreover, the study by Ness and Middleton provided students with one-on-one guidance which the current study did not. These differences might have contributed to why currently no evidence was found in favour of a personalised ID approach. Though no significant results were found, the means did show that students who received a personalised checklist improved their self-assessed SRL skills most, compared to the yoked and control condition.

According to the results, hypothesis 2 was not supported. Personalised and not personalised SRL instruction did not result in better SRL skills than no SRL instruction. Similarly to the first hypothesis, the second hypothesis might have been subjected to the impact of self-assessment during the pretest. Next to this, participants in the yoked condition improved their SRL skills marginally. A possible explanation for this unexpected finding could be found in the relationship between motivation and SRL. More specifically, Pintrich

(1999) found that the motivational belief ‘task value’ and SRL are positively related. Task value beliefs are “beliefs about the importance of, interest in, and value of the task” (Pintrich, 1999, p. 462). The component ‘importance’ of task value refers to students’ perceptions of the salience or importance of a task (Pintrich, 1999). Students’ in the yoked condition received a checklist based on a scale which did not contain their weakest SRL skill. Consequently, students might perceived their checklist as irrelevant and unimportant, resulting in a decrease in task importance. This decrease could have resulted in stagnation in SRL skills as well.

A possible reason why both hypotheses were refuted and why no compelling difference between the conditions was found might be the limited amount of learner control. Learner control is the extent to which learners can steer or control their experience of learning (Shyu & Brown, 1992). Admiraal et al. (2018) suggested that a balanced approach in personalised learning between teacher- and learner control has more potential for acquisition of SRL skills than focussing on either teacher- or learner control. In personalised learning interventions learner control over surface aspects such as pace, sequence and practice improved student achievement (Admiraal et al., 2018). Besides, learner control regarding instruction accommodated learners with conditions needed to practice self-regulated learning skills and is a first option to teaching those skills (Kinzie, 1990). Participants in the current study got the opportunity to execute learner control during their in-class activities and while doing their homework. However, regarding the instruction material (checklist) they were presented only once with the possibility to execute learner control (i.e., by indicating their preference on the task regarding the tip they wanted to receive). The participants could not, for example, influence the amount of time and moment scheduled to fill in the checklist (pace), select another SRL scale (task-selection) or ask for an explanation or support. Likewise, they did not have a copy of the checklist at their disposal to practice with it at



another moment. The amount of learner control in the present study might have been too little for students to develop their SRL skills optimally.

Although this research provides insight on personalised self-regulated learning with a checklist, it is not without limitations. The sample size of the study was far below the intended sample size due to the impact of COVID-19. Hence, the statistical power of the study was low, and the relationships found may be subject to a type I or type II error. The reliability of the adjusted SOL-Q-R for the scales time management and environmental structuring was questionable. Therefore, results should be interpreted with caution. Besides, the context of the pretest differed from the posttest. Instead of at school, the participants took the posttest at home. This change of context could also have influenced the results. Moreover, only a subset of the participants completed the posttest. To improve the generalisability of the study, a possible area of future research would be to investigate a personalised approach to teaching SRL in other courses and fields. Besides, future research is needed to examine the optimum balance between teacher and learner control in a personalised ID approach for SRL skill acquisition, for example, by comparing conditions with different levels of control.

Although the current study was based on a small sample of participants, this thesis has provided a deeper insight into how a personalised ID might work. This study found indications that through an intervention, it is possible to train and develop the SRL skills of students. SRL means from the personalised ID approach were found in the direction of the assumed relationship. These means could be an early indication that students develop their SRL skills better with personalised than non-personalised ID approaches. Besides, Ness and Middleton (2012) did find evidence in favour of a personalised SRL instruction with a checklist. Therefore, it is not entirely excluded to use a personalised ID approach instead of a one-size-fits-all approach to teach SRL skills in secondary education.

The findings of this study have two practical implications. Given the modest positive result from personalisation on SRL skill acquisition teachers may consider implementing personalised SRL instruction by using a checklist. However, this research did not yield precise guidelines on how to do that. Furthermore, though not being the core objective of this study, it was found that students applied the scale metacognitive activities after learning the least of the seven SRL scales. Therefore, teachers might focus on the development of this scale with their students.

To conclude, this study indicates that a personalised ID approach does not have to be taken into consideration when teaching SRL skills. Nonetheless, given (1) the beneficial effects of personalisation on domain-specific learning; (2) that the SRL skills from participants in the personalised condition have progressed most on average compared to the other conditions; and (3) the limitations of the current study, it is considered improbable that personalisation does not have this effect on domain generic learning. Whether personalisation substantially contributes to the skills development of SRL should be further investigated.

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## Appendix A Adjusted SOL-Q-R

SOL-Q-R translated from English into Dutch adjusted to the context, i.e. offline instead of online, and for seventh grade high school students instead of college students.

Table 1.

*Items from SOL-Q-R and the adjusted Dutch version.*

| SOL-Q-R  | Dutch translation   |
|--|---|
| <b>Metacognitive activities before learning</b>  | <b>Metacognitieve activiteiten vooraf aan het leren</b>   |
| 1. I think about what I really need to learn before I begin a task in this online course.                        | Voordat ik begin met het maken van een aardrijkskunde opdracht, denk ik na over wat ik echt moet leren.   |
| 2. I ask myself questions about what I am to study before I begin to learn for this online course.               | Voordat ik begin met leren voor de aardrijkskunde toets stel ik mezelf vragen over wat ik ga bestuderen.  |
| 3. I set short-term (daily or weekly) goals as well as long-term goals (monthly or for the whole online course). | Ik bepaal <b>zowel</b> korte termijn doelen (dagelijks of wekelijks) als lange termijn doelen (maandelijks of voor het hele vak aardrijkskunde).<br>*Voorbeeld korte termijn: “ik weet wat vulkanisme is”. Lange termijn: “ik weet de verbanden tussen vulkanisme en aardbevingen.” |
| 4. I set goals to help me manage my studying time for this online course.  | Ik stel doelen om me te helpen mijn studeertijd voor aardrijkskunde in te richten.  |
| 5. I set specific goals before I begin a task in this online course.   | Voordat ik begin aan een taak bij aardrijkskunde, bepaal ik specifieke doelen.  |
| 6. I think of alternative ways to solve a problem and choose the best one in this online course.                 | Ik denk na over verschillende manieren om een probleem op te lossen bij het maken van een aardrijkskunde opdracht en kies dan de beste manier.  |
| 7. At the start of a task I think about the study strategies I will use.   | Aan het begin van een taak denk ik na over de manier van leren die ik ga gebruiken.   |
| <b>Metacognitive activities during learning</b>  | <b>Metacognitieve activiteiten tijdens het leren</b>  |
| 8. When I study for this online course I try to use strategies that have worked in the past.                     | Wanneer ik studeer voor aardrijkskunde probeer ik manieren te gebruiken die in het verleden gewerkt hebben.   |
| 9. I have a specific purpose for each strategy I use in this online course.                                      | Ik heb een specifiek doel voor iedere manier van leren die ik gebruik bij aardrijkskunde  |
| 10. I am aware of what strategies I use when I study for this online course.                                     | Wanneer ik studeer voor aardrijkskunde ben ik me bewust van de manieren van leren die ik gebruik.   |
| 11. I change strategies when I do not make progress while learning for this online course.                       | Ik verander mijn manier van leren, wanneer ik geen vooruitgang maak, terwijl ik leer voor aardrijkskunde.   |



12. I periodically review to help me understand important relationships in this online course.

13. I find myself pausing regularly to check my comprehension of this online course.

14. I ask myself questions about how well I am doing while learning something in this online course.

Ik probeer om belangrijke verbanden tussen verschillende paragrafen te zien en te begrijpen bij aardrijkskunde.

Ik denk na over of ik de aardrijkskunde stof begrijp.

Wanneer ik leer voor aardrijkskunde, stel ik mezelf vragen over hoe goed ik dit doe.

---

#### **Metacognitive activities after learning**

15. I think about what I have learned after I finish working on this online course.

16. I ask myself how well I accomplished my goals once I'm finished working on this online course.

17. After studying for this online course I reflect on what I have learned.

18. I find myself analyzing the usefulness of strategies after I studied for this online course.

19. I ask myself if there were other ways to do things after I finish learning for this online course.

20. After learning for this online course, I think about study strategies I used.

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#### **Metacognitieve activiteiten na het leren**

Aan het eind van de aardrijkskundeles denk ik na over wat ik heb geleerd.

Als ik klaar ben met werken aan aardrijkskunde, vraag ik me af hoe goed ik mijn doelen heb bereikt.

Na het studeren voor aardrijkskunde, reflecteer ik op wat ik heb geleerd.

Nadat ik voor aardrijkskunde heb gestudeerd, denk ik na of de manier waarop ik geleerd heb nuttig is.

Nadat ik klaar ben met het leren voor de aardrijkskundetoets, vraag ik mezelf af of er ook andere manieren zijn om te leren.

Na het leren voor aardrijkskunde denk ik na over de manier van leren die ik heb gebruikt.

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#### **Time management**

21. I make good use of my study time for this online course.

22. I find it hard to stick to a study schedule for this online course.

23. I make sure I keep up with the weekly readings and assignments for this online course.

24. I often find that I don't spend very much time on this online course because of other activities.

25. I allocate studying time for this online course.

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#### **Tijdsmanagement**

Voor aardrijkskunde maak ik goed gebruik van mijn studeertijd.

Ik vind het moeilijk om me aan een studieplanning te houden voor aardrijkskunde.

Ik zorg ervoor dat ik wekelijks de opdrachten maak voor aardrijkskunde.

Ik merk dat ik vaak niet veel tijd aan aardrijkskunde besteed vanwege andere activiteiten.

Ik maak tijd vrij om huiswerk te maken voor aardrijkskunde.

---

#### **Environmental structuring**

26. I choose the location where I study for this online course to avoid too much distraction.

27. I find a comfortable place to study for this online course.

28. I know where I can study most efficiently for this online course.

29. I have a regular place set aside for studying in this online course.

---

#### **Structuren van de omgeving**

Ik kies een studeerplek waar ik zonder afleiding kan studeren voor aardrijkskunde.

Ik zoek een comfortabele plek om te studeren voor aardrijkskunde.

Ik weet waar ik het meest efficiënt kan studeren voor aardrijkskunde.

Ik heb een vaste werkplek om te studeren voor aardrijkskunde.

---

#### **Persistence**

---

#### **Doorzettingsvermogen**

- 
- |  |  |
|--|--|
| 30. When I am feeling bored studying for this online course, I force myself to pay attention.                                      | Wanneer ik me vervel tijdens het studeren voor aardrijkskunde, forceer ik mezelf om op te letten.                  |
| 31. When my mind begins to wander during a learning session for this online course, I make a special effort to keep concentrating. | Wanneer mijn gedachten beginnen af te dwalen tijdens een aardrijkskundeles, probeer ik me te blijven concentreren. |
| 32. When I begin to lose interest for this online course, I push myself even further.  | Wanneer ik mijn interesse voor het vak aardrijkskunde begin te verliezen, push ik mezelf nog meer.                 |
| 33. I work hard to do well in this online course even if I don't like what I have to do.   | Ik werk hard voor het vak aardrijkskunde, zelfs als ik datgene wat ik moet doen niet leuk vind.                    |
| 34. Even when materials in this online course are dull and uninteresting, I manage to keep working until I finish.                 | Zelfs wanneer de onderwerpen bij aardrijkskunde saai zijn, lukt het me om te blijven werken totdat ik klaar ben.   |
| 35. Even when I feel lazy or bored when I study for this online course, I finish what I planned to do.                             | Zelfs wanneer ik lui of verveeld ben tijdens het studeren voor aardrijkskunde, maak ik mijn planning af.           |
| 36. When work is difficult in this online course, I continue to keep working.  | Wanneer ik een aardrijkskunde opdracht moeilijk vind, blijf ik doorwerken.   |
- 

**Help seeking**

37. When I do not fully understand something, I ask other course members in this online course for ideas.
38. I share my problems with my classmates in this course online, so we know what we are struggling with and how to solve our problems.
39. I am persistent in getting help from the instructor of this online course.
40. When I am not sure about some material in this online course, I check with other people.
41. I communicate with my classmates to find out how I am doing in this online course.
42. When I have trouble learning, I ask for help.

**Hulp zoeken**

- Wanneer ik de aardrijkskunde lesstof niet helemaal begrijp, vraag ik hulp aan klasgenoten.
- Wanneer ik een opdracht lastig vindt bij aardrijkskunde, deel ik dat met mijn klasgenoten, zodat we elkaar kunnen helpen.
- Ik houd vol, met het vragen om hulp aan de aardrijkskunde leraar, tot ik hulp krijg.
- Wanneer ik de aardrijkskunde lesstof niet begrijp, vraag ik dit na bij andere mensen.
- Ik praat met mijn klasgenoten om erachter te komen hoe goed ik de aardrijkskunde lesstof begrijp.
- Wanneer ik moeite heb met leren, vraag ik om hulp.
-

## Appendix B Intervention materials

| <b>Checklist Question</b>  | <b>Reference</b>                                       |
|--|--|
| <b>Metacognitive activities before learning (outside of class)</b>   |  |
| Heb ik gekeken welke leerstof ik moet kennen voor de aardrijkskundetoets om me te helpen met het bepalen van leerdoelen?   | Item 1<br>Jansen, van Leeuwen, Janssen, & Kester, 2018 |
| Heb ik in mijn planning bepaalt wat het belangrijkste is?  | Item 4<br>Jansen et al., 2018                          |
| Heb ik in mijn planning de volgorde bepaald van wat ik eerst ga doen (eerst dit, dan dat)?                                 | Item 4<br>Jansen et al., 2018                          |
| Heb ik in mijn planning bepaalt hoeveel tijd iedere opdracht kost?   | Item 4<br>Jansen et al., 2018                          |
| <b>Metacognitive activities before learning (today during this class)</b>  |  |
| Heb ik voordat ik begon met werken, nagedacht over wat ik moet doen voor de opdracht?                                      | Item 1<br>Jansen et al., 2018                          |
| Heb ik nagedacht over wat ik al weet over dit onderwerp voordat ik begon aan de opdracht?                                  | Item 7<br>Jansen et al., 2018                          |
| Heb ik nagedacht over wat ik nodig heb om de opdracht goed te uitvoeren?   | Item 7<br>Jansen et al., 2018                          |
| Heb ik nagedacht over welke manier van leren ik ga gebruiken voor het maken van de opdracht?                               | Item 7<br>Jansen et al., 2018                          |
| Heb ik in mijn planning de volgorde bepaald van wat ik eerst ga doen (eerst dit, dan dat)?                                 | Item 4<br>Jansen et al., 2018                          |
| Heb ik in mijn planning bepaalt hoeveel tijd iedere opdracht kost?   | Item 4<br>Jansen et al., 2018                          |
| Heb ik bedacht wanneer ik tevreden ben over het uitvoeren van de opdracht?   | Item 3*<br>Jansen et al., 2018                         |
| Heb ik nagedacht over wat ik uit deze opdracht wil halen?  | Item 5<br>Jansen et al., 2018                          |
| <b>Metacognitive activities during learning (outside of class)</b>   |  |
| Weet ik op wat voor manier ik normaal gesproken leer voor de aardrijkskunde toets?   | Item 10<br>Jansen et al., 2018                         |
| Heb ik mezelf vragen gesteld over hoe goed ik bezig ben tijdens het leren in aardrijkskunde?                               | Item 14<br>Jansen et al., 2018                         |
| Heb ik mijn manier van leren veranderd toen ik merkte dat deze niet nuttig was voor het leren voor de aardrijkskundetoets? | Item 11<br>Jansen et al., 2018                         |
| Blijf ik tijdens het voorbereiden van de aardrijkskundetoets oefenen tot ik de lesstof herinner en erover kan vertellen?   | Zimmerman & Martinez-Pons, 1986*                       |
| <b>Metacognitive activities during learning (today during this class)</b>  |  |
| Heb ik aantekeningen gemaakt tijdens de aardrijkskundeles?   | Zimmerman & Martinez-Pons, 1986                        |
| Heb ik tijdens het werken aan de opdracht opgelet of ik geen fouten maak?  | Zimmerman & Martinez-Pons, 1986                        |
| Heb ik tijdens de les opgelet of ik alles begrijp?   | Item 13<br>Jansen et al., 2018                         |

| <b>Metacognitive activities after learning (outside of class)</b>  |                                    |
|--|------------------------------------|
| Heb ik nagedacht over <b>wat</b> ik heb geleerd?   | Item 15<br>Jansen et al., 2018     |
| Heb ik nagedacht over <b>hoe</b> (op wat voor manier) ik heb geleerd?  | Item 20<br>Jansen et al., 2018     |
| Heb ik nagedacht of mijn huiswerk maken goed ging?   | Item 17<br>Jansen et al., 2018     |
| Heb ik nagedacht over wat beter kan bij het maken van mijn huiswerk?   | Item 18<br>Jansen et al., 2018     |
| Heb ik nagedacht over wat ik de volgende keer ga doen als ik huiswerk ga maken of leren?   | Item 19<br>Jansen et al., 2018     |
| Heb ik nagedacht waarom de leraar wil dat ik deze lesstof leer?  | Zimmerman & Martinez-Pons, 1986*   |
| Heb ik mijn werk gecontroleerd om er zeker van te zijn dat ik het foutloos gemaakt heb?  | Zimmerman & Martinez-Pons, 1986    |
| Heb ik toen ik klaar was met het maken van huiswerk voor aardrijkskunde (opdrachten maken of leren voor de toets) mezelf gevraagd of ik mijn doel bereikt heb? | Item 16<br>Jansen et al., 2018     |
| <b>Metacognitive activities after learning (today during this class)</b>   |                                    |
| Heb ik nagedacht of de lesstof van vandaag gebruikt kan worden in andere situaties?  | Item 17<br>Jansen et al., 2018     |
| Heb ik nagedacht over wat goed ging tijdens de les?  | Item 18<br>Jansen et al., 2018     |
| Heb ik nagedacht over wat beter kan tijdens de les?  | Item 19<br>Jansen et al., 2018     |
| <b>Time management (outside of class)</b>  |                                    |
| Heb ik deze week tijd ingepland om aan aardrijkskunde te werken (het maken van huiswerk en/of leren voor de toets)?  | Item 25<br>Jansen et al., 2018     |
| Heb ik me aan mijn studeerplanning gehouden voor aardrijkskunde?   | Item 22<br>Jansen et al., 2018     |
| Heb ik ervoor gezorgd dat ik het wekelijkse huiswerk van aardrijkskunde op tijd af heb?  | Item 23<br>Jansen et al., 2018     |
| Ben ik op tijd begonnen met het maken van mijn huiswerk en/of het leren voor de aardrijkskunde toets, zodat ik niet alles op het laatste moment hoeft te doen? | Zimmerman & Martinez-Pons, 1986    |
| Weet ik hoe lang ik moet werken om mijn aardrijkskunde huiswerk (opdracht) af te krijgen?  | Item 21*<br>Jansen et al., 2018    |
| <b>Time management (today during this class)</b>   |                                    |
| Heb ik goed gebruik gemaakt van de tijd in de les om aan de opdracht/huiswerk te werken?   | Item 21<br>Jansen et al., 2018     |
| <b>Help seeking (outside of class)</b>   |                                    |
| Heb ik toen ik problemen had met het maken van mijn huiswerk iemand (bijvoorbeeld een vriend(in) of je ouders) om hulp gevraagd?                               | Item 37, 42<br>Jansen et al., 2018 |
| Heb ik toen ik problemen had met het maken van mijn huiswerk bronnen geraadpleegd (bijvoorbeeld internet)?   | Item 42<br>Jansen et al., 2018     |

| <b>Help seeking (today during this class)</b>  |                                     |
|--|-------------------------------------|
| Heb ik de leraar om hulp gevraagd wanneer ik iets niet begreep?  | Item 39<br>Jansen et al., 2018      |
| Heb ik een klasgenoot om hulp gevraagd aan wanneer ik iets niet begreep?   | Item 40<br>Jansen et al., 2018      |
| Heb ik eerst het boek gelezen voor ik een vraag ging stellen?  | Zimmerman &<br>Martinez-Pons, 1986  |
| <b>Persistence (outside of class)</b>  |                                     |
| Heb ik mezelf geforceerd om te werken voor aardrijkskunde (opdrachten maken of leren voor de toets), ook wanneer ik me verveelde?              | Item 30<br>Jansen et al., 2018      |
| Heb ik toen mijn gedachten afdwaalden tijdens het maken van mijn aardrijkskunde huiswerk moeite gedaan om me te blijven concentreren?          | Item 31<br>Jansen et al., 2018      |
| Heb ik mijn concentratie vergroot door te bedenken waarom ik me inzet voor aardrijkskunde?   | Item 31*<br>Jansen et al., 2018     |
| Heb ik mezelf beloond toen ik mijn aardrijkskunde huiswerk af had, door bijvoorbeeld te Netflixen of te gaan gamen?                            | Zimmerman &<br>Martinez-Pons, 1986  |
| <b>Persistence (today during this class)</b>   |                                     |
| Heb ik mezelf geforceerd om op te letten in de aardrijkskundeles, ook wanneer ik me verveelde?   | Item 30<br>Jansen et al., 2018      |
| Heb ik ondanks dat de opdracht (soms) moeilijk was toch doorgewerkt?   | Item 36<br>Jansen et al., 2018      |
| Heb ik mijn concentratie vergroot door het maken van aantekeningen tijdens de aardrijkskundeles?   | Item 31*<br>Jansen et al., 2018     |
| <b>Environmental structuring (outside of class)</b>  |                                     |
| Heb ik een rustige werkplek opgezocht om te studeren om afleiding te voorkomen?  | Item 26<br>Jansen et al., 2018      |
| Heb ik mijn telefoon op stil gezet en weggelegd tijdens het maken van mijn huiswerk, zodat ik me kan concentreren op wat ik aan het doen ben?  | Zimmerman &<br>Martinez-Pons, 1986  |
| Heb ik mijn boeken meegenomen om mijn aardrijkskunde huiswerk te maken?  | Zimmerman &<br>Martinez-Pons, 1986* |
| <b>Environmental structuring (today during this class)</b>   |                                     |
| Heb ik mezelf afgesloten van alles wat me kan afleiden tijdens mijn de aardrijkskundeles?  | Zimmerman &<br>Martinez-Pons, 1986  |
| Heb ik mijn telefoon uitgezet en in mijn tas opgeborgen tijdens de aardrijkskundeles, zodat ik me kan concentreren op wat ik aan het doen ben? | Zimmerman &<br>Martinez-Pons, 1986  |
| Zit ik naast iemand waarnaast ik rustig kan werken tijdens de aardrijkskundeles?   | Item 26<br>Jansen et al., 2018      |
| Heb ik mijn boeken meegenomen voor het maken van mijn aardrijkskunde huiswerk in de les?   | Zimmerman &<br>Martinez-Pons, 1986* |
| <b>Emotions (control group) (outside of class)</b>   |                                     |
| Heb ik tijdens het studeren (huiswerk/leren) een blij gevoel gehad en wilde ik aan aardrijkskunde werken?                                      | Clark & Saxberg,<br>2018            |

|   |                       |
|---|-----------------------|
| Heb ik tijdens het studeren me geïrriteerd en een beetje boos gevoeld en geen zin gehad om te studeren?                               | Clark & Saxberg, 2018 |
| Heb ik me tijdens het studeren voor aardrijkskunde zo bang gevoeld om te falen dat het mijn studeren belemmerde?                      | Clark & Saxberg, 2018 |
| Heb ik me tijdens het studeren voor aardrijkskunde positief en vrolijk gevoeld en keek ik ernaar uit om te leren?                     | Clark & Saxberg, 2018 |
| Heb ik me tijdens het studeren voor aardrijkskunde depressief en pessimistisch gevoeld en ondermijnen deze gevoelens al mijn energie? | Clark & Saxberg, 2018 |
| <hr/>   |                       |
| <b>Emotions (control group) (today during this class)</b>   |                       |
| <hr/>   |                       |
| Heb ik tijdens deze les een blij gevoel gehad en wilde ik aan aardrijkskunde werken?  | Clark & Saxberg, 2018 |
| Heb ik me tijdens deze les geïrriteerd en een beetje boos gevoeld en geen zin gehad om te werken?                                     | Clark & Saxberg, 2018 |
| Heb ik me tijdens deze les zo bang gevoeld om te falen dat het mijn studeren belemmerde?  | Clark & Saxberg, 2018 |
| Heb ik me tijdens deze les positief en vrolijk gevoeld en keek ik ernaar uit om te leren?   | Clark & Saxberg, 2018 |
| Heb ik me tijdens deze les depressief en pessimistisch gevoeld en heb ik door deze gevoelens minder energie?                          | Clark & Saxberg, 2018 |
| <hr/>   |                       |

\*These questions cannot be traced directly one-on-one since they have been adjusted to be appropriate for the target group, but they are derived from the reference.

## Appendix C Example checklist lesson three

This is an example of a part of a checklist regarding SRL scale ‘help-seeking’ provided with a number before each question and an extra header with the question “pay attention new!”?

Participants were asked: “Choose a question (from numbers 1 to 5) about which you want to get a tip in the next lesson. Circle the number of the question (please circle no more than 1 number!)”

## Buiten de les

Hieronder staan een aantal vragen over hoe je hebt gewerkt buiten de les om, bijvoorbeeld thuis.

- |  | Ja                       | Nee                      |
|--|--------------------------|--------------------------|
| 1 Heb ik, toen ik problemen had met het maken van mijn huiswerk, iemand (bijvoorbeeld een vriend(in) of je ouders) om hulp gevraagd? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 Heb ik, toen ik problemen had met het maken van mijn huiswerk, bronnen geraadpleegd (bijvoorbeeld internet)?                       | <input type="checkbox"/> | <input type="checkbox"/> |

Bijnaam: \_\_\_\_\_

Datum: \_\_\_\_-03-2020

## Vandaag in deze les

Hieronder staan een aantal vragen over hoe je tijdens de les van vandaag hebt gewerkt.

- |  | Ja                       | Nee                      |
|--|--------------------------|--------------------------|
| 3 Heb ik de leraar om hulp gevraagd wanneer ik iets niet begreep?                  | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 Heb ik een klasgenoot om hulp gevraagd wanneer ik iets niet begreep?             | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 Heb ik eerst het aardrijkskunde boek gelezen, voordat ik een vraag ging stellen? | <input type="checkbox"/> | <input type="checkbox"/> |

## Let op nieuw!

Kies een vraag (uit de nummers 1 t/m 5) waarover je in de volgende les een tip wil krijgen.

**Omcirkel** het nummer van de vraag (niet meer dan 1 nummer omcirkelen a.u.b.!).



## Appendix D SRL tips provided to participants

Six examples of SRL tips that participants received during the fourth class of the intervention.

Bijnaam: Delft

Tip

**Wat?**

Denk na over wat je al van het onderwerp weet, voordat je begint met een opdracht.

**Hoe?**

Optie 1: Stel jezelf de vragen:  
-Wat weet ik al over dit onderwerp?  
-Heb ik bijvoorbeeld iets over het onderwerp gelezen of gehoord in het nieuws?  
Optie 2: Maak een woordenwolk over het onderwerp.



Waarom? Door verbanden te maken tussen wat je al weet en de nieuwe kennis zal je de nieuwe informatie beter begrijpen en leren.

Bijnaam: Zagreb

Tip

**Wat?**

Forceer jezelf om op te letten tijdens de aardrijkskundes, ook als je je verveelt.

**Hoe?**

Stap 1: Haal afleiding weg. Voorbeelden:  
-Zet je telefoon uit  
-Vraag of een pratende klasgenoot stil is.  
-Je kunt ook vragen of je naast iemand mag zitten die minder kletst.  
Stap 2: Als je gedachten af dwalen, merk dit op.  
Stap 3: Probeer je gedachten te focussen op de les.  
-Probeer in je hoofd te herhalen wat de leraar zegt.  
-Nog beter is om aantekeningen te maken. Schrijf de belangrijkste punten op in steekwoorden of in korte zinnen. Onderzoek toont aan dat je de lesstof beter onthoudt en beter begrijpt door aantekeningen te schrijven met de hand in plaats van door te typen.

Bijnaam: Hilversum

Tip

**Wat?**

Denk na over hoe je hebt geleerd.

**Hoe?**

Er zijn verschillende manieren om te leren. Hoe heb jij geleerd? Was deze manier van leren effectief (heeft het goed gewerkt)? Voorbeelden van effectieve manieren zijn:  
-een samenvatting schrijven;  
-je laten overhoren;  
-de lesstof uitleggen aan iemand anders;  
-zelf vragen bedenken, die de leraar kan stellen over het onderwerp en deze beantwoorden;  
-hardop lezen, in plaats van in je hoofd;  
-denken over wat je al weet over het onderwerp en nieuwe informatie hieraan verbinden.  
-oefenvragen maken;  
-uitleggen waarom iets waar is.  
-een paragraaf lezen en deze daarna afdekken met je hand. Daarna in je eigen woorden uitleggen wat je hebt geleerd.

Bijnaam: Leeuwarden

Tip

**Wat?**

Bepaal een volgorde in je planning.

**Hoe?**

Stap 1: Maak een lijst van al je huiswerk  
Stap 2: Schrijf bij ieder onderdeel op hoeveel tijd je ervoor nodig denkt te hebben.  
Stap 3: Schrijf op welke dag het onderdeel af moet zijn.  
Stap 2: Denk nu na over een handige volgorde:  
-begin met een moeilijke opdracht en eindig met een makkelijke opdracht;  
-begin met wat als eerste af moet;  
-plan na maximaal 1 uur leren/huiswerk maken een korte pauze (±5-10 minuten);  
-zorg ervoor dat je het huiswerk waar je veel tijd voor nodig hebt, verspreid over meerdere momenten. Plan dit huiswerk dus op meerdere dagen. Wil je toch alles op 1 dag doen? Wissel dan tussendoor af, door aan een ander vak te werken of door een korte pauze te nemen.

Bijnaam: Boedapest1

Tip

**Wat?**

Denk na of je je doel hebt bereikt wanneer je klaar bent met het maken van je aardrijkskunde huiswerk (opdracht maken/leren voor de toets).

**Hoe?**

Stap 1: Denk na over wat je doel was. Heb je vooraf een doel bedacht? Voorbeelden van doelen zijn:  
-Huiswerk af hebben  
-Houden aan je planning  
-Vragen stellen  
-Leren van je fouten  
-Zelf oplossen van problemen  
Stap 2: Heb je jouw doel bereikt?  
-Wat ging goed?  
-Wat kan beter?  
-Wat ga je volgende keer hetzelfde doen?  
-Wat ga je volgende keer anders doen?

Bijnaam: Berlijn

Tip

**Wat?**

Schat bij het maken van je planning vooraf in hoeveel tijd je denkt dat een taak kost.

**Hoe?**

Stap 1: Maak een lijst van je huiswerk.  
Stap 2: Schrijf naast elke taak de minuten op, die je voor een taak nodig hebt. *Weet je niet precies hoe lang je bezig bent met een opdracht of met leren?* Zet dan een timer op je telefoon en schrijf de tijd op. Zo kun je bij de volgende planning een betere inschatting maken.  
Stap 3: Zorg ervoor dat je het huiswerk waarvoor je veel tijd nodig hebt, over meerdere momenten verspreidt.  
-Leer op meerdere dagen in de week voor je aardrijkskunde toets, in plaats van alles in een keer op een dag.  
-Werk niet uren achter elkaar aan hetzelfde vak. Plan hiervoor korte pauzes in, of werk tussendoor aan een ander vak.

## Appendix E FETC form

**Section 1: Basic Study Information**

1. Name student:

Lisa Sprangers

2. Name(s) of the supervisor(s):

Liesbeth Kester

3. Title of the thesis (plan):

Personalised self-regulated learning with a checklist in secondary education

4. Does the study concern a multi-center project, e.g. a collaboration with other organizations, universities, a GGZ mental health care institution, or a university medical center?

Yes / No  
If yes: Explain.

5. Where will the study (data collection) be conducted? If this is abroad, please note that you have to be sure of the local ethical codes of conducts and permissions.

Beatrix College (Tilburg) and Cambreur College (Dongen)

**Section 2: Study Details I**

6. Will you collect data?

**Yes / No**

Yes → Continue to question 11

No → Continue to question 7

7. Where is the data stored?

The data will be stored on the server of Utrecht University by using data management solution Yoda.

8. Is the data publicly available?

**Yes / No**

If yes: Where?

9. Can participants be identified by the student? (e.g., does the data contain (indirectly retrievable) personal information, video, or audio data?)

**Yes / No**

If yes: Explain.

10. If the data is pseudonymized, who has the key to permit re-identification?

The specific geography teachers of the participating classes have a key to permit re-identification. This key is a list with student names and their alias and will be used in case a student forgets his or her alias. This list is not available to the researcher, and the teacher has no access to the data, so anonymity is guaranteed.

**Section 3: Participants**

11. What age group is included in your study?

11-14 year old students

12. Will be participants that are recruited be > 16 years? **Yes/No**

13. Will participants be mentally competent (wilsbekwam in Dutch)? **Yes/No**

14. Does the participant population contain vulnerable persons? **Yes/No**  
(e.g., incapacitated, children, mentally challenged, traumatized, pregnant)

15. If you answered 'Yes' to any of the three questions above: Please provide reasons to justify why this particular groups of participants are included in your study.

Adolescents are included to improve instructional design for self-regulated learning acquisition for students in secondary education.

16. What possible risk could participating hold for your participants?

A possible risk is that participants receive less time than normally for the domain-specific instruction.

17. What measures are implemented to minimize risks (or burden) for the participants?

The experiment is designed to be as little time consuming as possible.

18. What time investment and effort will be requested from participants?

During a period of 4 weeks around 30 minutes total:  
- ±15 minutes: explanation of the research, moment for students to ask questions, and filling in the pretest questionnaire.  
- 4x ±3 minutes: filling in checklist (which means one checklist per lesson)  
- ±5 minutes: filling in the posttest questionnaire

19. Will be participants be reimbursed for their efforts? If yes, how? (financial reimbursement, travelling expenses, otherwise). What is the amount? Will this compensation depend on certain conditions, such as the completion of the study?

No, there will be no compensation.

20. How does the burden on the participants compare to the study's potential scientific or practical contribution?

It is expected that students, except the ones in the control condition, will improve their self-regulated learning skills. Improved self-regulation skills may contribute into better learning outcomes.

21. What is the number of participants? Provide a power analysis and/or motivation for the number of participants. The current convention is a power of 0.80. If the study deviates from this convention, the FERB would like you to justify why this is necessary.

(Note, you want to include enough participants to be able to answer your research questions adequately, but you do not want to include too many participants and unnecessarily burden participants.)

The intended number of participants was determined with G\*Power, indicating a total sample size of  $N = 111$  and a power of 0.80. The research started with  $N = 118$ . However, due to the corona virus disease, 80 participants were excluded (missing values), and the remaining sample was  $N = 38$ .

22. How will the participants be recruited? Explain and attach the information letter to this document.

Participants will be recruited by convenience sampling. One secondary school geography teacher will be approached. Likewise, the team leader from the former secondary school of the researcher will be approached.

After the team leaders of both schools will permit to conduct the research, the geography teachers will select which classes can participate.

23. How much time will prospective participants have to decide as to whether they will indeed participate in the study?

Active informed consent by the parents: 2 weeks.  
Students in class: approximately 2 minutes.

24. Please explain the consent procedures. Note, active consent of participants (or their parents) is in principle mandatory. Enclose the consent letters as attachments. You can use the consent forms on Blackboard.

Two weeks in advance of the experiment, parents receive an information letter with the informed consent form (Appendix F). The geography teachers spread the information letters with active informed consent amongst their students. The students give the document to their parents or caretakers. Thereafter, the students hand in the signed form to the team leader or geography teacher. The researcher collects the statements of consent. Students receive a consent form in class (Appendix G) and are allowed to ask any questions they have concerning the research to the researcher and teacher.

25. Are the participants fully free to participate and terminate their participation whenever they want and without stating their grounds for doing so? Explain.

Yes, if one does not want to participate the student does not have to participate.

26. Will the participants be in a dependent relationship with the researcher?

Yes / **No**  
If yes: Explain.

27. Is there an independent contact person or a general email address of a complaint officer whom the participant can contact?

Yes, an independent contact person (Lisette Hornstra) and general email address of a complaint officer (klachtenfunctionaris-fetcsocwet@uu.nl.) are provided in the information part of the informed consent form.

28. Is there an independent contact person or a general email address of a complaint officer whom the participant can contact in case of complaints?

Yes, both are provided in the information part of the informed consent form.

**Section 4: Data management**

29. Who has access to the data and who will be responsible for managing (access to) the data?

The researcher has access to the data and will be responsible for managing the data. Besides, the first and second assessor of the master thesis have access to the data.

30. What type of data will you collect or create? Please provide a description of the instruments.

- Adjusted SOL-Q-R questionnaire (pretest-posttest)

This questionnaire collects data about SRL from the learners.

42 items with a 7-point Likert scale ranging from “not all true for me” (=1) to “very true for me” (=7).

- Checklist

Students indicate ‘yes’ or ‘no’ to questions (range 5-12) about a specific SRL scale.

Descriptive statistics (e.g., frequency) will be evaluated as explanatory data in case results show no differences between the conditions.

31. Will you be exchanging (personal) data with organizations/research partners outside the UU?

Yes / No  
If yes: Explain.

32. If so, will a data processing agreement be made up?

Yes / No  
If yes: Please attach the agreement.  
If no: Please explain.

N/A

33. Where will the data be stored and for how long?

Data will be stored on the faculty server for a period of seven years by using Your Data.

34. Will the data potentially be used for other purposes than the master’s thesis? (e.g., publication, reporting back to participants, etc.)

No, the data will not be used for other purposes than the master’s thesis.

35. Will the data potentially be used for other purposes than the master’s thesis? (e.g., publication, reporting back to participants, etc.)

**Yes / No**

If yes: Explain.



## Appendix F: Active informed consent parents

**INFORMATIEBRIEF VOOR OUDERS**  
**ACTIEVE INFORMED CONSENT**  
Versie 20 januari 2020

Beste ouder(s)/verzorger(s),

Middels deze brief willen we u toestemming vragen voor deelname van uw kind aan het onderzoek *Gepersonaliseerd Zelfregulerend Leren Met een Checklist*. Daarbij informeren we u via dit bericht over het onderzoek, dat gepland is in week 7, 8, 10, 11 en 12. Leest u daarom het onderstaande s.v.p. zorgvuldig door. Indien u instemt met deelname van uw kind aan dit onderzoek, dan vragen wij u het toestemmingsformulier in te vullen, te ondertekenen en aan de teamleider te geven (zie de toestemmingsverklaring).

**Doelgroep van het onderzoek**

De doelgroep voor dit onderzoek zijn havo-vwo-leerlingen uit leerjaar 1. Het onderzoek vindt plaats bij het vak aardrijkskunde.

**Doel van het onderzoek**

Zelfregulerend leren (ZRL) is een belangrijke vaardigheid die leerlingen nodig hebben om het eigen leerproces te plannen, monitoren en reguleren. In dit onderzoek wordt de invloed van personalisatie (het op maat bieden van onderwijs) van een checklist op het verkrijgen van ZRL-vaardigheden onderzocht. Dit gebeurt aan de hand van een vragenlijst. Ook zullen de leerlingen gedurende vier lessen een checklist invullen. Daarnaast worden de cijfers van uw kind op de aardrijkskunde toets van voor- en na het onderzoek vergeleken.

**Wat wordt van uw kind verwacht?**

In dit onderzoek wordt uw kind gevraagd om twee keer een vragenlijst in te vullen. De vragen zullen gaan over ZRL en brengen het huidige niveau en het eindniveau van ZRL in kaart. Daarnaast zal uw kind vier keer een checklist invullen. Deze checklist bestaat uit vragen over een specifiek onderdeel van ZRL, bijvoorbeeld tijdsmanagement. Een voorbeeldvraag is: "Ben ik op tijd begonnen met het maken van mijn huiswerk?". Uw kind kruist per vraag 'ja' of 'nee' aan. Dit vergt een kleine inspanning van ongeveer 3 minuten per les. Het geheel zal, verspreidt over vier weken, in totaal ongeveer een half uur in beslag nemen. Het gehele onderzoek wordt klassikaal afgenomen. Uw kind krijgt uitgebreide instructies en de mogelijkheid tot het stellen van vragen, zodat hij/zij goed zal begrijpen wat er van hem/haar verwacht wordt. Dit onderzoek is niet belonend of bestraffend. Dit betekent dat de deelname niet meetelt in de schoolresultaten van uw kind.

**Vertrouwelijkheid verwerking gegevens**

Voor dit onderzoek is het nodig dat wij enkele persoonsgegevens (geslacht, leeftijd en schooladvies) van uw kind verzamelen. Deze gegevens zijn nodig om de onderzoeksvraag goed te kunnen beantwoorden. De persoonsgegevens worden op een andere computer opgeslagen dan de onderzoeksgegevens zelf (de zgn. ruwe data). De computer waarop de persoonsgegevens worden opgeslagen is volgens de hoogste normen beveiligd en alleen betrokken onderzoekers hebben toegang tot deze gegevens. De gegevens zelf zijn ook beveiligd d.m.v. een beveiligingscode. De gegevens van uw kind zullen voor minimaal 10 jaar bewaard worden. Dit is volgens de daartoe bestemde richtlijnen van de VSNU. Meer informatie over privacy kunt

u lezen op de website van de Autoriteit Persoonsgegevens:

<https://autoriteitpersoonsgegevens.nl/nl/onderwerpen/avg-europese-privacywetgeving>

**Anonimiteit**

Onderzoeksgegevens zijn anoniem en zijn dus niet tot uw kind te herleiden. Volledig geanonimiseerde onderzoeksgegevens kunnen voor wetenschappelijke doeleinden worden gedeeld met andere onderzoekers. Persoonsgegevens (over wie uw kind is) blijven vertrouwelijk en worden niet gedeeld zonder uw uitdrukkelijke toestemming. De privacy van u en uw kind is dus gewaarborgd.

**Vrijwillige deelname**

Deelname aan dit onderzoek is vrijwillig. Als uw kind gaandeweg het onderzoek besluit dat hij of zij wil stoppen, dan kan dat op elk moment, zonder opgaaf van redenen en zonder dat dit op enige wijze gevolgen zal hebben voor u of uw kind. De tot dan toe verzamelde gegevens worden gebruikt voor het onderzoek, tenzij u, of uw kind expliciet aangeeft dit niet te willen.

**Onafhankelijk contact en klachten functionaris**

Mocht u vragen of opmerkingen hebben over dit onderzoek, dan kunt u zich wenden tot de verantwoordelijke onderzoeker, Lisa Sprangers, via [l.t.p.sprangers@students.uu.nl](mailto:l.t.p.sprangers@students.uu.nl). Daarnaast kunt u contact opnemen met de onafhankelijke contactpersoon, Dr. Lisette Hornstra, via [T.E.Hornstra@uu.nl](mailto:T.E.Hornstra@uu.nl). Heeft u een officiële klacht over het onderzoek? Dan kunt u zich wenden tot de klachtenfunctionaris via [klachtenfunctionaris-fetcsocwet@uu.nl](mailto:klachtenfunctionaris-fetcsocwet@uu.nl).

Als u, na het lezen van deze informatiebrief besluit tot deelname van uw kind aan het onderzoek verzoek ik u bijgevoegd antwoordstrookje te ondertekenen en in te leveren bij de teamleider.

Met vriendelijke groet,  
Lisa Sprangers

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**TOESTEMMINGSVERKLARING**

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Hierbij verklaar ik de informatiebrief m.b.t. onderzoek *Gepersonaliseerd Zelfregulerend Leren Met een Checklist* gelezen hebben en akkoord te gaan met deelname van mijn kind aan het onderzoek.

De ouder(s) / begeleider(s) van

Naam kind: .....

Klas: .....

**GEVEN HIERBIJ TOESTEMMING**

voor deelname aan het onderzoek *Gepersonaliseerd Zelfregulerend Leren Met een Checklist*

Naam ouder: .....

Datum: .....

Handtekening \*: .....

*\*De handtekening impliceert dat deze verklaring ook wordt onderschreven door een mogelijke andere gezag houder van uw kind.*

DEZE ONDERTEKENDE TOESTEMMINGSVERKLARING KUNT U

**VÓÓR vrijdag 7 februari 2020** INLEVEREN BIJ

X (teamleider)

## Appendix G: Informed consent students

Informatie voor deelname aan (sociaal)-wetenschappelijk onderzoek

Gepersonaliseerd zelfregulerend leren met een checklist  
14 februari 2020, Tilburg

Beste leerling,

In jouw klas wordt een onderzoek uitgevoerd over zelfregulerend leren. Dit is de vaardigheid die je nodig hebt om je leerproces te regelen. Denk hierbij aan plannen en monitoren (het continue in de gaten houden van processen). Met deze brief wil ik je om toestemming vragen om mee te doen aan het onderzoek.

**Doel** = meer duidelijkheid krijgen over het personaliseren (op maat aanbieden van onderwijs) voor de ontwikkeling van zelfregulerende vaardigheden.

**Wat ga je doen?** Ik zou je willen vragen of je een 2x keer een vragenlijst en 4x een checklist wilt invullen. De vragenlijst wordt ingevuld op je mobiele telefoon en Lisa Sprangers (onderzoekster) is de eerste keer hierbij aanwezig. Het invullen duurt ongeveer 5 minuten. De andere keren, zal de leraar de checklist uitdelen en de vragenlijst afnemen. Het invullen van de checklist duurt ongeveer 3 minuten.

**Voorwaarden:**

- (1) Ik heb voldoende informatie gekregen over het doel van het onderzoek;
- (2) Ik heb elke vraag in verband met het onderzoek kunnen stellen;
- (3) Ik neem vrijwillig deel aan het onderzoek;
- (4) Ik begrijp dat de gegevens die ik voor dit onderzoek deel alleen voor het onderzoek gebruikt zullen worden;
- (5) Ik begrijp dat om privacy te behouden, alle onderzoeksresultaten anoniem verwerkt zullen worden;
- (6) Ik geef de toestemming aan de onderzoeker om de resultaten op een vertrouwelijke en anonieme manier voor minimaal 10 jaar te bewaren, te verwerken en te rapporteren;
- (7) Ik weet dat ik op ieder moment mijn deelname aan het onderzoek stop kan zetten, zonder hiervoor een reden te geven en zonder dat dit voor mij nadelen heeft;
- (8) Ik weet dat de tot dan toe verzamelde gegevens gebruikt worden voor het onderzoek, maar niet als ik duidelijk aangeeft dat ik dit niet wil.

Als je verder nog vragen hebt, kun je die nu stellen of later contact opnemen met Lisa Sprangers, de onderzoeker.

Hartelijk dank voor je medewerking!

Lisa Sprangers  
l.t.p.sprangers@students.uu.nl

Versiedatum: 26 januari 2020

Toestemmingsverklaring:

Hierbij verklaar ik dat ik de informatiebrief m.b.t. het onderzoek *Gepersonaliseerd zelfregulerend leren met een checklist* gelezen heb en akkoord ga met de voorwaarden en deelname aan het onderzoek.

Datum: 14-02-2020

Naam:

Handtekening:

.....

.....