

## Appendix 1. GREET 2015 checklist,<sup>1</sup> based upon the TIDieR guidance<sup>2</sup>

BRIEF NAME
<p><b>1. INTERVENTION:</b> <i>Be smart about your health</i> secondary school resources</p> <p>We will conduct a cluster randomised trial to compare use of the <i>Be smart about your health</i> secondary school resources (intervention) to routine teaching (control) in lower secondary schools in Kenya, Rwanda, and Uganda.</p>
<p><b>WHY - this educational process</b></p> <p><b>2. THEORY:</b> The <i>Be smart about your health</i> secondary school resources are based on the <i>Informed Health Choices (IHC) Key Concepts</i> framework. The framework includes concepts (principles) that people should understand and apply when deciding whether to believe a claim about the effects of health actions (things that people do to care for their health or the health of others) and what to do.<sup>3,4</sup> The framework is based on evidence of the importance of the included concepts, logic, feedback, other relevant frameworks, and adaptation of the IHC Key Concepts to other types of interventions such as educational, environmental, and policing interventions.<sup>3,5</sup></p> <p>The resources are being developed by the investigators between 2020 and 2022 using human-centred design methods.<sup>6</sup> This includes idea generation and prototyping, piloting with observation, user-testing with teachers and students, and feedback from networks of teachers, students, and curriculum developers in Kenya, Rwanda, and Uganda. The aim of the design process is to ensure that teachers and students find the learning resources to be engaging and useful.</p> <p>The teaching strategies used in the resources are based in part on an overview of systematic reviews of teaching strategies,<sup>7</sup> and draw on several educational theories. These include social constructivist theory (that posits learning can be maximized through well-designed, intentional social interaction with other learners),<sup>8</sup> the theory of active student response (that posits learning is enhanced by high levels of active student response),<sup>9</sup> and the elaborative retrieval hypothesis (that posits the search for correct answers on practice tests or quizzes results in multiple retrieval routes which aid later recall).<sup>10</sup></p> <p><b>3. LEARNING OBJECTIVES:</b> The primary learning goal is for students to have a basic ability to think critically about health actions and understand why this is important for them. They should be able to recognise claims about the effects of health actions and assess some of those claims. They should understand why it is important for them that researchers study the effects of health actions and recognise two key features of reliable comparisons of health actions. They should recognise that health actions can have both advantages and disadvantages and the importance of weighing both when deciding what to do.</p>

**4. EBP CONTENT:** The resources focus on nine IHC Key Concepts that were prioritised by curriculum developers, teachers, and researchers in Kenya, Rwanda, and Uganda.<sup>11</sup> The concepts are:

- Health actions may be helpful, but also harmful or wasteful.
- Obvious effects of health actions are rare.
- Most claims about the effects of health actions that are only based on personal experiences or something being new or old are not reliable.
- It is impossible to know what would have happened without a health action if it is not compared to taking a different action or to taking no action.
- If the groups of people in a comparison between health actions are too small, any difference between what happens to the groups may be random and not because of the different health actions.
- If the groups of people in a comparison between health actions are different at the start, any difference between what happens to the groups may be because the groups were different at the start and not because of the different health actions.
- When deciding what to do, it is important to weigh the advantages against the disadvantages of health actions.

## WHAT

**5. MATERIALS:** *Be smart about your health* is a collection of digital learning resources for lower secondary schools. The resources for teachers include 10 lessons in two formats: lesson plans for teachers using a blackboard and lesson plans for teachers using a projector. The aim is for students to learn to think critically about health claims and choices. The resources will be made available to schools in the intervention group. Teachers in those schools will download the resources and deliver the lessons. Schools in the control group will continue teaching the national curriculum where critical thinking competences are developed in lessons taught in class. No additional materials will be provided to the control schools.

Each lesson includes a quiz to review and reinforce what was learned in the previous lesson, small group activity, and a wrap-up to reinforce the learning goals for the lesson. The resources for teachers include an introduction, lesson plans, a glossary, a collection of examples that can be used to illustrate the Key Concepts, and information about the teaching strategies that are used (based on an overview of systematic reviews).<sup>7</sup> For each of the 10 lessons there are the learning goals, a summary of the lesson, key terms introduced in the lesson, the main teaching strategies used in the lesson, explanations of the Key Concepts (including examples and common misunderstandings), suggestions for preparation before the lesson, and a detailed lesson plan.

## 6. EDUCATIONAL STRATEGIES:

Key strategies used across lessons include guided note taking, quizzes (using response cards<sup>9</sup> or computer-based), small group activities, and collecting and concept mapping claims about the effects of health actions as homework. Other strategies used in some of the lessons include concept cartoons, inquiry-based instruction, and role play.

**7. INCENTIVES:** Teachers at schools without Internet access will be reimbursed for the cost of downloading the learning resources and any other costs related to participation in the trial. They will not be paid for participating in the trial and there will be no other financial incentives for the schools, head teachers, teachers, or students. The evaluation administered at the end of the school term will not count towards the students' school marks or assessment of the teachers or schools.

## WHO PROVIDED

**8. INSTRUCTORS:** The headteacher at each participating school will select teachers of relevant subjects (e.g., biology) for year-1 or year-2 of lower secondary school. The teachers will be invited in a training of 3 days. The content of training will be; Why it is important to think critically about health actions, overview of the lessons (focusing on the learning goals), introduction to the learning resources, teaching strategies, how to use and edit slides, scheduling and preparing for lessons, and information about the trial.

## HOW

**9. DELIVERY:** The 10 lessons will be delivered by the teachers during regular classroom time. Depending on what equipment is available to the teachers, they will deliver the lessons using only a blackboard or using a projector and presentations that are included in the digital resources. The students will work together in groups of three to six. The number of students in a class will vary. Teachers will be allowed to modify how they teach and the resources they use to fit their context.

## WHERE

**10. ENVIRONMENT:** Representative samples of schools will be recruited, including rural and urban schools. The conditions in the schools will vary.

## WHEN and HOW MUCH

**11. SCHEDULE:** The 10 lessons will be taught in a single term. Each school will decide how to fit the lessons into the term timetable.

12. Each lesson will take a single period (40 minutes). The students will be encouraged to collect and assess claims about the effects of health actions outside of class and to discuss claims with their families and friends. The teacher will need up to 30 minutes to prepare for each lesson.

## PLANNED CHANGES

13. No specific adaptation is required, but teachers will be able to adapt the lessons, for example by using different or additional examples.

## UNPLANNED CHANGES

14. Teachers will be asked to complete an evaluation form after each lesson, including information about changes they made to the lesson plan, and each teacher will be observed for one lesson. We will not give feedback to the teachers during the trial.

## HOW WELL

**15. ATTENDANCE:** The teacher will record attendance for each lesson. Students will be encouraged to attend all lessons by telling them when the next lesson will be and the learning goals. The resources are being designed to appeal to students and to make clear the relevance and importance of the learning goals.

16. We will explore the extent to which the lessons were delivered as planned in a process evaluation, based on the evaluation forms completed by teachers after each lesson, our observations, and interviews with teachers and students.

17. The teachers will be asked to record when each lesson was taught, the duration of each lesson, and whether all the lesson were completed as planned.

## **References**

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