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Empirical Analysis of the Effectiveness of Texts in Plain Language (Leichte Sprache) in Biology Lessons

Objective of the Project

According to the UN Convention on the Rights of Persons with Disabilities, the concept of inclusion has found its way into schools. In everyday class situations in German schools is therefore and because of migration and flight a language-heterogeneous student body to find. Inclusion aims at lowering barriers, which also includes barriers located in texts. The concept of Plain Language (German: Leichte Sprache) also aims at doing so and addresses humans that would not be able to understand the original texts and would therefore prefer an easier text in these situations, e.g. humans with a cognitive-sensory disability, but also migrants (Maaß, 2015). It has been found out that the modification of texts into plain language can react to numerous language problems that can be caused by scientific texts (Beese et al., 2017; Bickes, 2016; Schmellentin et al., 2017). There is also evidence that the usage of a more learner orientated language can contribute to the development of biological concepts (Brown & Ryoo, 2008).

Research Questions

1. Do educational texts in plain language convey the same competences concerning content knowledge as non-modified educational texts would do?
2. How do biology teachers and learners of biology rate educational texts in plain language before and after a unit of confrontation?

Samples

Pilot Study

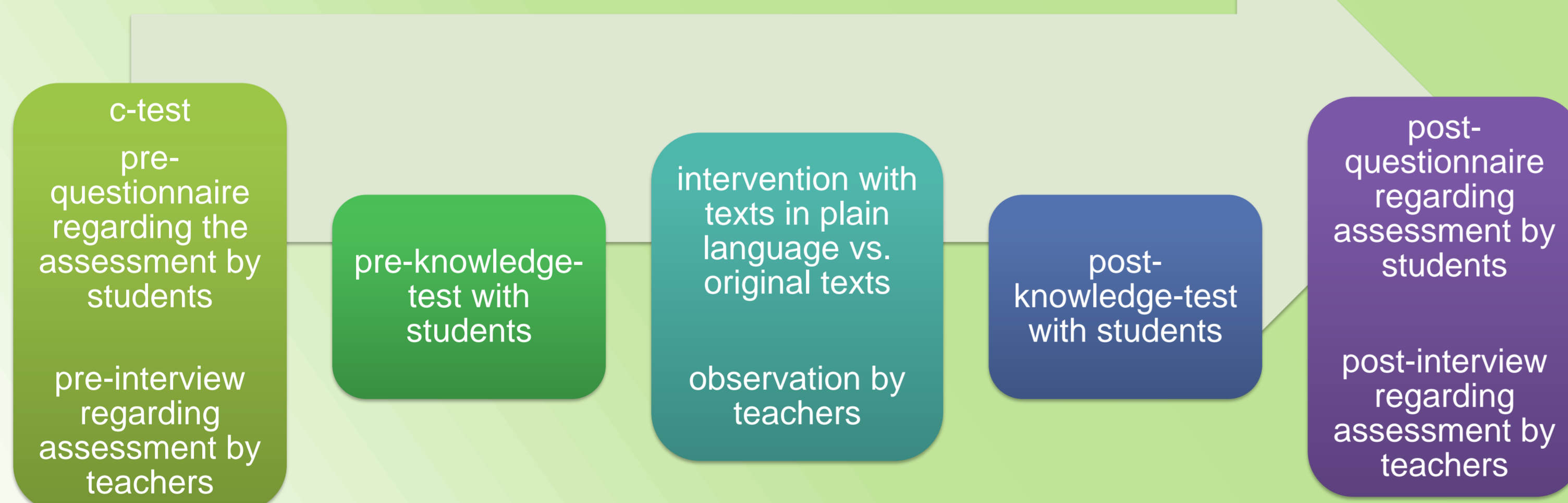
3 classes of the 5th grade from 2 middle schools:
 control group (original text): 25 students (0 with assumed weaknesses in language),
 test group (text in plain language): 44 students (18 with weaknesses and assumed weaknesses in language)

(Expected and Planned) Main Study with Modified Test Instruments

4 classes of the 5th grade from 1 middle school:
 control group (original text): 25-50 students
 test group: 50-75 students

Method

The presented study is designed as a qualitative pre- and post-test study concerning the implementation and evaluation of a teaching unit (with focus on an ecological topic) in biology lessons with **texts in plain language (Leichte Sprache) in the test groups and original school book texts in the control groups**. The amount of passed on **competences of specific biological knowledge** as well as the **attitude** of the key players in school education (**students and teachers**) will be evaluated. Test instruments are a **knowledge test** including open questions, a **questionnaire** with open and closed questions for testing the attitudes of students towards the used texts, **observation protocols** created by teachers focusing on the student's reactions towards implemented texts, **interviews** for evaluating the attitudes of teachers as well as **C-Tests** for evaluating the level of lingual competences of the students before the intervention. The material will be analysed mainly with the help of the qualitative content analysis by Mayring (2015). The results will be compared with personal characteristics as for example a possible migration background and/or diagnosed learning difficulties.



First Results

Concerning the knowledge test:

All examined groups of the pilot study (control group, test group 1 and test group 2) show a significant **increase of knowledge** (Fig. 1). Noticeable is **the low level of knowledge of the control group in the pretest** compared to the test groups (Fig. 1). The **increase of knowledge is significant higher in the control group compared to test group 1** ($p = .036^*$), **but slightly lower compared to test group 2** ($p = n.s.$) (Fig. 2). One could carefully state that using texts in plain language has **neither a strong negative or positive effect** on the increase of knowledge. Further testing with a higher number of experimental subjects will be needed to answer the first research question.

Concerning student's attitudes towards plain language characteristics:

Some characteristics are **mainly rated positively** in both examined student groups (e.g. explanations, bold print, new lines for new sentences, use of short sentences and paragraphs as well as the large font), **others more negatively** (e.g. the interpunct and repetitions of words) (Fig. 3 & 4). **Similar-looking results** in rating of the same characteristics **between two examined student groups** are to find (Fig. 3 & 4). **Students with/with assumed special educational needs concerning language tend to rate plain language more positively after the intervention than students without these needs** (Fig. 3 & 4).

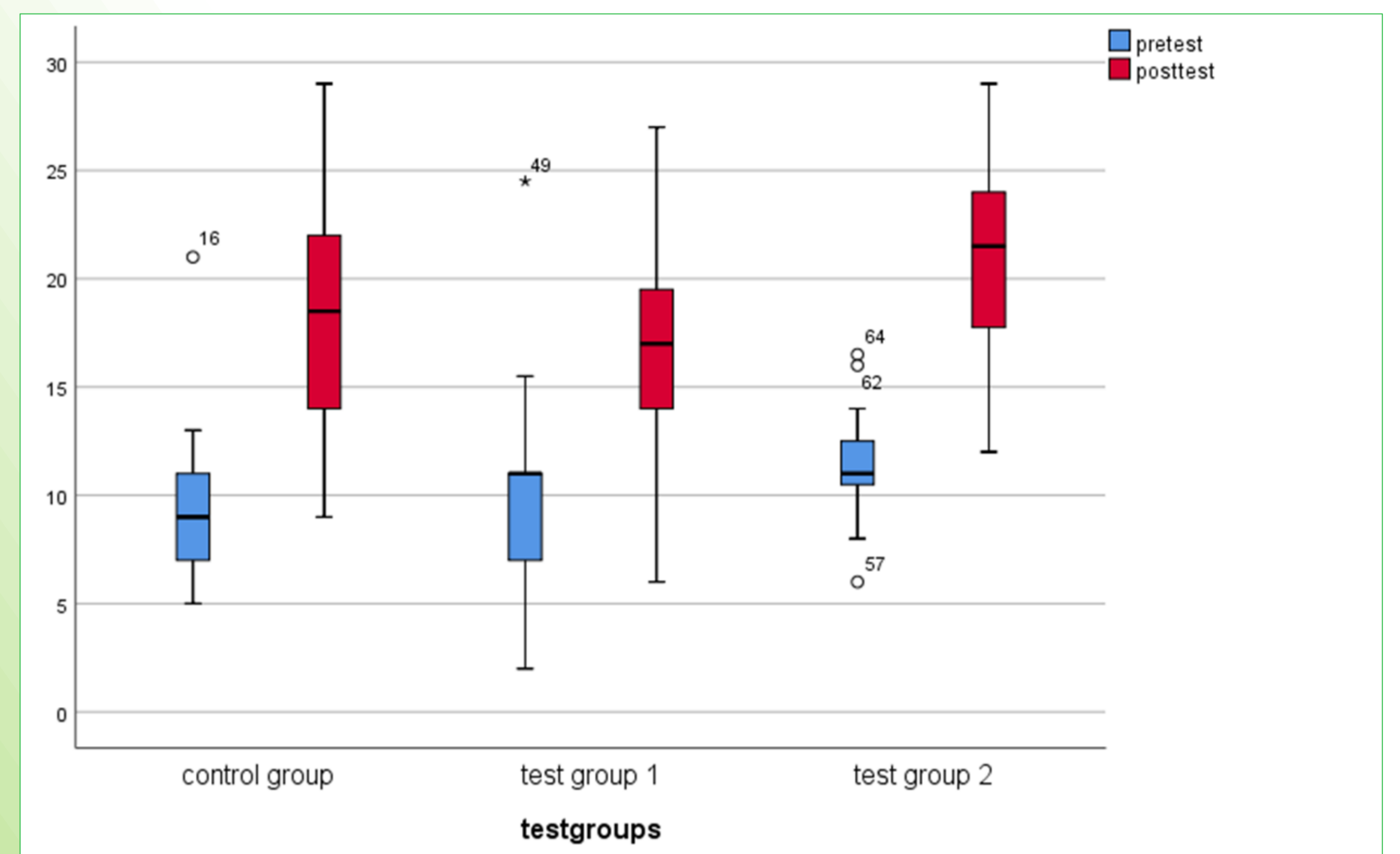


Fig. 1: Pre- and Posttest Results of Knowledge Test (comparison between control group, test group 1 and test group 2)

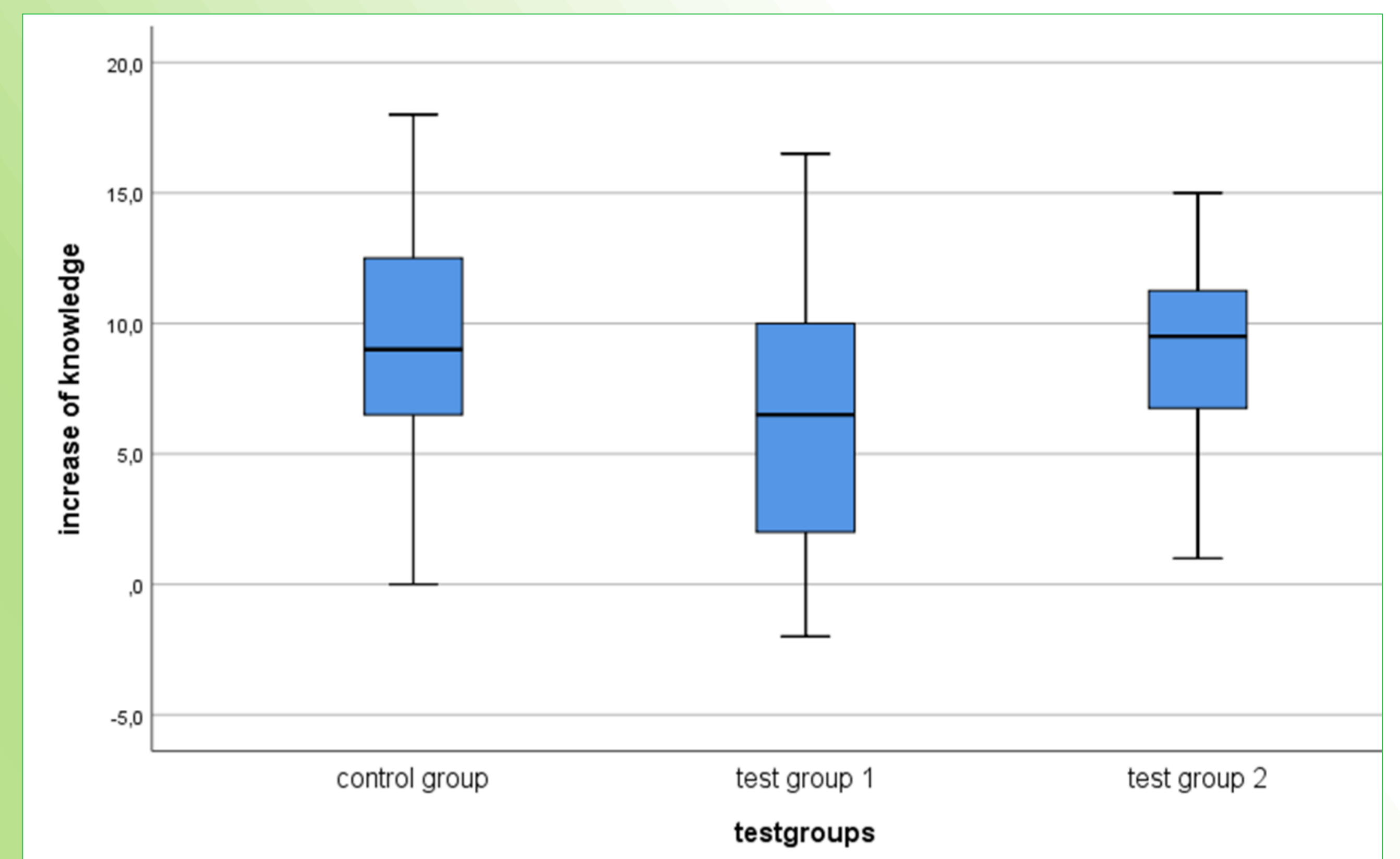


Fig. 2: Increase of Knowledge (comparison between control group, test group 1 and test group 2)

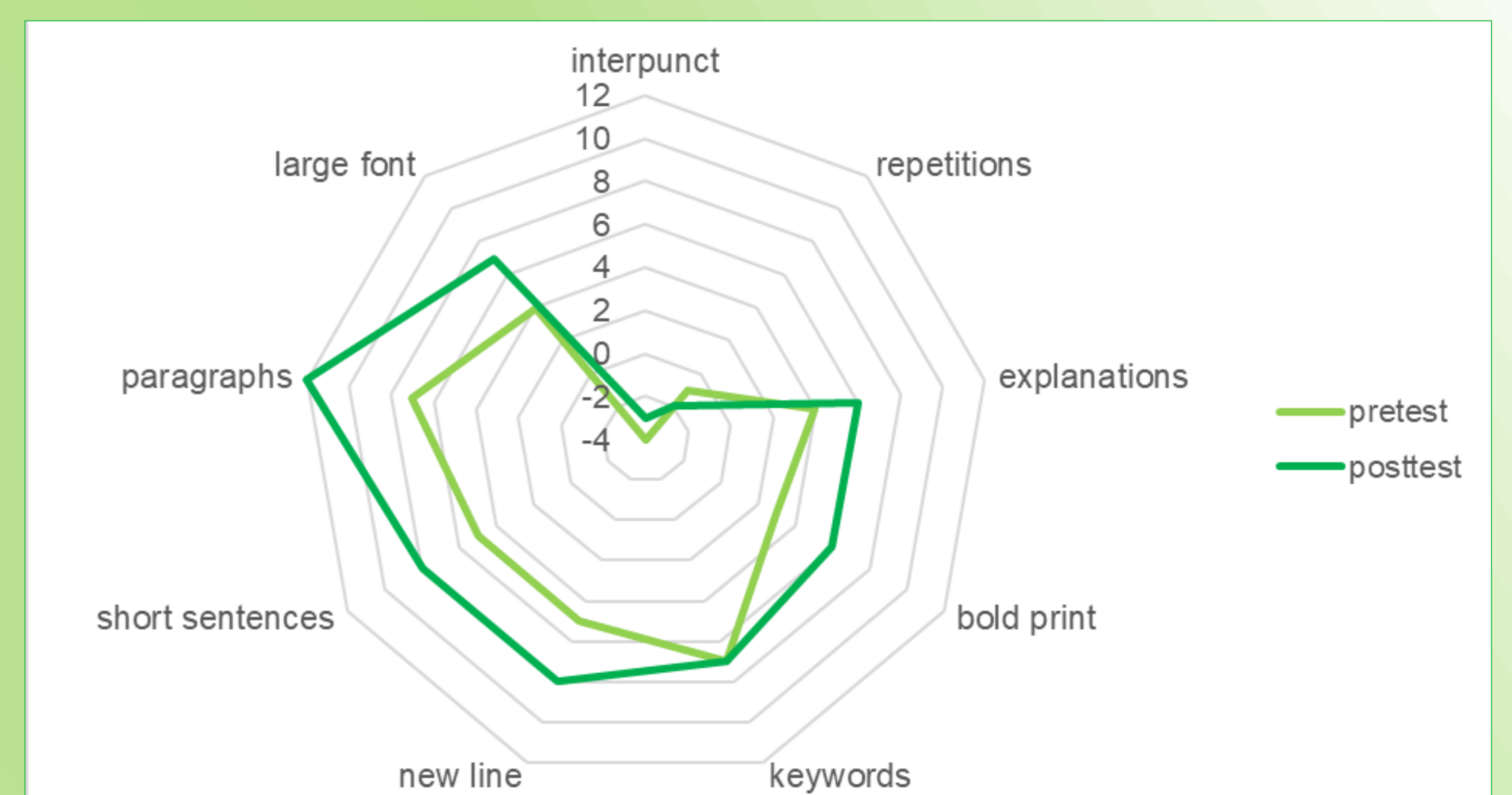


Fig. 3: Student's Ratings of Plain Language Characteristics before and after Intervention (18 students with/with assumed special educational needs regarding language)

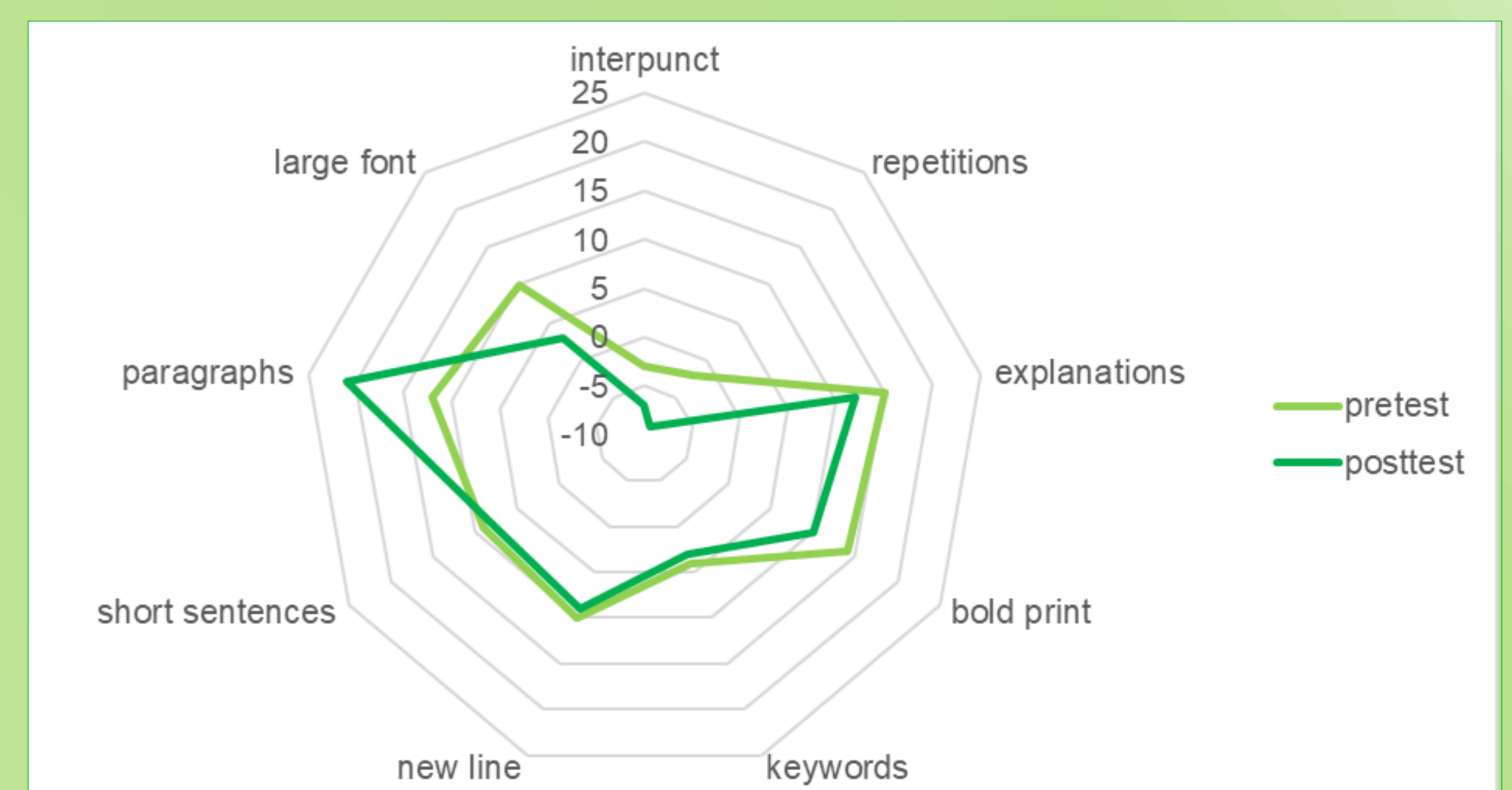


Fig. 4: Student's Ratings of Plain Language Characteristics before and after Intervention (26 students without any special educational needs regarding language)

Sources:
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