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DOI

[10.17239/L1ESLL-2021.21.01.16](https://doi.org/10.17239/L1ESLL-2021.21.01.16)

Publication date

2021

Document Version

Final published version

Published in

L1 Educational Studies in Language and Literature

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[Link to publication](#)

Citation for published version (APA):

Amir, A., Atkin, H., & Rijlaarsdam, G. (2021). The case of 'Yummy Yummy' - a replication of an intervention program. *L1 Educational Studies in Language and Literature*, 21.

<https://doi.org/10.17239/L1ESLL-2021.21.01.16>

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THE CASE OF “YUMMY YUMMY” – A REPLICATION OF AN INTERVENTION PROGRAM

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Abstract

The current experimental study replicates and expands on the *Yummy Yummy* intervention study focusing on the role of observation in learning-to-write (Rijlaarsdam et al., 2008, 2009) that included 210 grade-7 students in seven classes from seven schools who were randomly assigned to one of two intervention roles: “readers” (tasked with text selection and discussion) or “observers” (tasked with observing readers to distill criteria they employ in their discussion). Effects of role condition were assessed by comparing the revisions students made in their texts, and with a questionnaire designed to assess students’ perceived learning experiences, particularly the extent of their learning during the intervention program and their explanations for their assertions. The results were consistent with the original study: revised writing products showed that observers outperformed readers, particularly in the domain of rhetoric. Additionally, observers self-reported higher levels of procedural knowledge acquisition compared to readers, while readers self-reported higher levels of declarative knowledge acquisition. The *Yummy Yummy* – observational learning replicated intervention program resulted in higher quality writing and had a differential impact on students’ perceived learning.

Keywords: observational learning, writing instruction, perceived learning, persuasive writing, intervention study

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Amir, A., Atkin, H., & Rijlaarsdam, G. (2021). *The Case of “Yummy Yummy” – A replication of an intervention program*. *L1-Educational Studies in Language and Literature*, 21, 1-36. <https://doi.org/10.17239/L1ESLL-2021.21.01.16>

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1. THEORETICAL REVIEW

Writing is one of the ways to process, learn, organize, and store information, as well as communicate with teachers and peers. The development of writing skills is a long-term and particularly difficult process as it represents the pinnacle of literacy skill acquisition, requiring the production of varied content matching the circumstances, genre, mode, and register of the communication. Throughout school, students are expected to execute writing processes—developing and organizing ideas for various writing tasks and genre characteristics, rereading, revising, and editing drafts (e.g., see Philippakos & MacArthur, 2019). This requires a recruitment of linguistic resources (vocabulary, complex linguistic structures, and punctuation), as well as cognitive resources (managerial control, supervision abilities, and planning and goal-setting abilities) (Fidalgo et al., 2015; Graham et al., 2005; Hayes, 1996; Ravid et al., 2016). Thus, writing plays a critical role in school learning.

The goal of writing instruction is to strengthen writing skills, elevating writing to a meaningful activity that can be applied to learning in different situations. Students must also learn how to manage their writing: setting goals, constructing a strategic plan, monitoring, and evaluating task performance (Rijlaarsdam & Couzijn, 2000).

Additionally, writers should develop awareness of their potential readers, determining how to draft a communicative text aimed at those specific audiences (Rijlaarsdam et al., 2013)). This fosters writers' metacognitive awareness and self-regulation (Graham & Harris, 2000; MacArthur, 2012) and formation of schemes of work or meta-cognitive strategies. Such strategies guide and support monitoring of writing processes (Author3 et al., 2013), including the social feedback provided throughout the process (Kitsantas & Zimmerman, 2002).

Audience awareness usually develops through revision (Hayes, 2004), generating great value not only due to revision's essential role in the writing process but also the potential learning effect on the writers themselves. Specifically, audience awareness can assist students in learning effective writing, using the revision process to consider the content of a given text but also specifically its audience. Moreover, setting specific revision goals directing learners to consider both content and audience may encourage them to make changes that involve a change of meaning (Midgette et al., 2008; Moore & MacArthur, 2012; MacArthur, 2016). Thus, students benefit from learning to write functional and communicative texts aimed at a real recipient, develop audience awareness to ascertain how texts would likely be received by the reader, and use different strategies to address diverse circumstances. This establishes the mastery of writing tasks likely to be required in real life (Rijlaarsdam & Couzijn, 2000; Rijlaarsdam et al., 2013).

While writing is considered a social-interactive process that takes place between the reader and the writer, most student writing assignments have no real audience. Instead, students are presented with approximate characteristics of an audience, rarely getting a chance to witness real readers interact with their text and its qualities, so that communication usually remains virtual (Rijlaarsdam et al., 2009).

One practice that might promote communicative writing and audience awareness is observational learning that can provide effective pedagogical tools in which writing is conceptualized as a social-interactive process, which takes place between the reader and the writer (Braaksma et al., 2004; Couzijn, 1999; Raedts et al., 2007; Fidalgo et al., 2015; Rijlaarsdam & Couzijn, 2000; Rijlaarsdam et al., 2006, 2008, 2009). In the section below we expand on observational learning.

1.1 Observational learning

Observational learning occurs when learners acquire proficiency through observing others who serve as role models (Bandura, 1997). Modelling is a practice that facilitates self-regulation and acquisition of writing strategies. The social-cognitive approach of self-regulation development (Schunk & Zimmerman, 1997; Zimmerman, 2000, 2002) defines self-regulation as self-formation of thoughts, feelings, and behaviors strategically directed to achieving specific goals (Zimmerman & Schunk, 2001; Zimmerman, 2000). Additionally, modelling emphasizes adaptive beliefs about self-efficacy, attributions, and motivation towards the task throughout the entire writing process (Fidalgo & Torrance, 2017). Cognitive activities used to promote self-regulation have proven to be essential for learning to write (e.g., Braaksma et al., 2001, 2006).

Studies on observational learning have dealt with modelling via “think-alouds,” including self-regulation practices, guided practice in pairs where students apply the think-aloud strategy, and independent training while thinking aloud (MacArthur, 2016). Rijlaarsdam and colleagues expanded the concept of observational learning to writing (e.g., Braaksma et al., 2001, 2002, 2004; Rijlaarsdam et al., 2008, 2009; Rijlaarsdam et al., 2011). Students are tasked with observing, analyzing, comparing, and evaluating other writers who are learning to write, be it writing an argumentative text (Braaksma et al., 2002, 2004, 2017; Couzijn, 1999; Raedts et al., 2007), a synthesis text (Raedts et al., 2007; van Ockenburg et al., 2021), or cooperatively revising texts or evaluating written synthesis texts of peers (van Steendam et al., 2010).

Studies that have examined the effects of modelling without a component of direct instruction have found that students can learn a great deal from observing others engaged in writing activities (Braaksma et al., 2004; Rijlaarsdam et al., 2008). Without direct teaching, students’ quality of writing still improved just due to modelling (Fidalgo et al., 2011; Fidalgo & Torrance, 2017), indicating the considerable potential of observational learning to enhancing writing skills. Freed from writing, observing others enables novice writers to allocate more cognitive effort into the learning task.

Consequently, students may learn more through observation than by carrying out the writing task themselves. They can execute many cognitive activities, such as identifying the strategies of their target of observation, tracing different processes of writing, identifying criteria for evaluation, etc. (Braaksma et al., 2001; 2004). Learning-by-observation directs students to engage in more metacognitive reflection

when this methodology is preceded by writing tasks. Studies of students' thinking aloud while observing peers revealed the types of metacognitive and cognitive activities (comparing, evaluating, reflecting) that are stimulated by observational learning (Braaksma et al., 2004, 2017).

Observation can either be used as a pre-writing activity with students tasked to observe the writing processes of peers or other writers to develop awareness of strategies, or it can be a post-writing activity in which learners test the text by observing readers attempting its processing (Moore & MacArthur, 2012; Rijlaarsdam et al., 2008, 2009; Rijlaarsdam et al., 2011). These options lead to two methods of observation found to be more effective than the traditional instruction of writing practice. Pre-writing observation entails observing writers (students, adults, professional writers, or peers) carrying out writing tasks and verbalizing thoughts and steps while writing (live or by means of video recordings) and evaluating the quality of their performance (e.g., Braaksma et al., 2002, 2004; Lopez et al., 2017; Raedts et al., 2007; van Steendam et al., 2012).

The post-writing method is designed to enhance audience awareness (in this case specifically in the observation of readers) and provide feedback on their written products. Through observation, students experience how readers process texts (Couzijn & Rijlaarsdam, 2004; Crasnich & Lumbelli, 2004; Lumbelli & Paoletti, 2004; Moore & MacArthur, 2012; Rijlaarsdam et al., 2008, 2009). Students practice writing and subsequently observe peers who read and analyze their written texts using the think-aloud methodology (Couzijn, 1999; Couzijn & Rijlaarsdam, 1996, 2004; Moore & MacArthur, 2012; Rijlaarsdam et al., 2006; Rijlaarsdam et al., 2008, 2009). This enables writers to observe readers of their own text, while others can observe readers of texts written by peers or other writers.

This post-writing method triggers audience awareness—the essential goal of readers' observation. As mentioned, writing researchers have considered awareness of the reader to be a vital component in writing (Flower & Hayes, 1980; Hayes et al., 1987; Nystrand, 1986). Proficient writers attend their audience while writing and understand that writing is an interactive, meaning-making process between readers and writers. Observing actual readers increases this awareness (Rijlaarsdam et al., 2008, 2009) and dealing with problems posed from the readers' point of view may stimulate writers to write better (McCutchen, 2011; Midgette et al., 2008). Such an experience can help writers understand how the reading process works, and how their writing of the text can enhance or impede reading (Crasnich & Lumbelli, 2004; Lumbelli & Paoletti, 2004). Persuasive writing particularly demands audience awareness as writers must achieve the compositional goal of convincing an audience to accept a certain position.

Using this method, several studies have focused on the effect of observing readers of writing (Rijlaarsdam et al., 2006, 2008, 2009). Two studies relevant to this article are Rijlaarsdam and colleagues (2008, 2009) and Moore & MacArthur, (2012). The first study, conceptually replicated in the current study, presents an intervention program that took place in the Netherlands in one grade-7 classroom with 16 student

participants (aged 12-13). The students were asked to write a letter of complaint following a real-world problem related to the consumer environment. They were divided into two group roles: readers and observers. Observing students employed observation methods to gather feedback on the qualities of the text for rewriting purposes and increase writers' awareness of the reader as part of their specialization in writing (Rijlaarsdam et al., 2008, 2009; Braaksma, & Rijlaarsdam, 2015). While writing quality improved in both groups, observers improved more than readers.

In a similar study by Moore and MacArthur (2012) inspired by the *Yummy Yummy* case, grade-5 students were asked to write persuasive letters to their principals. The study incorporated three conditions: readers, observers, and controls. Unlike the *Yummy Yummy* study, in this study readers were prompted by leading questions and observers were guided and supported with a graphical organizer. Additionally, unlike the *Yummy Yummy* study, reviewed letters were rated holistically (primary trait score).

In Moore and MacArthur's (2012) study, readers discussed three letters of varying quality levels and assessed their persuasiveness, observers wrote comments and held a discussion to generate a list of criteria used by readers, and participants in the control condition merely practiced writing. Findings revealed that readers produced rewritten drafts that were of better quality (effect size pre-post $d=.50$) and included more evidence of audience awareness than observers. The observer group (effect size pre-post $d = .38$) did not differ from the reader group nor from the control group (effect size pre-post $d = .07$). Furthermore, analysis of think-aloud protocols showed greater audience awareness among readers. Comparisons between the reader and observer groups in this respect are slightly biased as the reader group already scored better than the observer group in the pretest (effect size reader-observer group $d = .36$), and one may expect that better writers produce richer accounts of audience awareness.

Since Moore and MacArthur's results are inconsistent with the study findings by Rijlaarsdam and colleagues (2008, 2009), which was replicated in the current study, we employed the principles of role theory (Rijlaarsdam et al., 2008, 2009) to offer a way to implement observational learning in writing lessons.

1.2 Role theory in writing instruction

Role theory offers an educational environment for writing in which the classroom becomes a learning community (Brown & Campione, 1994). When completing writing assignments, students transition between several roles: writer, reader, and observer (Braaksma et al., 2004; Rijlaarsdam et al., 2004, 2008, 2009). Students become a discourse community, a group that actively engage in investigating their own learning process. This approach has several functions, from understanding knowledge about writing and genre to observing the writing of others from different perspectives. Readers read a text written by another writer, whereas observers observe those reading the text they have written (Rijlaarsdam et al., 2008, 2009). The

changing of roles enables writers and peers to function as researchers studying a written text, familiarizing themselves with their audience, collecting real responses to their texts, and discovering how to best produce communicative writing products. Additionally, there are findings that suggest these moves refine writers' self-regulatory processes, influenced by feedback that the learners receive from themselves and the environment (e.g., Kaplan et al., 2011), and contribute to the improvement of writing.

The *Yummy Yummy* intervention program (Rijlaarsdam et al., 2008, 2009) was designed to apply observational learning and assimilate role theory in writing instruction, focusing on students' existing but typically implicit knowledge. The study aimed to examine the effect of observing readers on the quality of revision. Intervention results showed that observers applied and internalized criteria for effective writing, which affected the quality of their revised writing product (Rijlaarsdam et al., 2008, 2009).

While the original study was conducted in 2008-2009, it still seems relevant for contemporary writing education. Furthermore, there appears to be a need for replicative research that is supported by statistical analysis to test the effectiveness of intervention studies and enable a broader generalization concerning the intervention program (Graham & Harris, 2017; Rijlaarsdam et al., 2018). For these reasons, we decided to replicate the study of Rijlaarsdam and colleagues (2008, 2009). Before presenting the current study, we will present the original (replicated) study and address considerations for the replicated intervention program.

2. DESIGN LESSON SERIES: THE CASE OF YUMMY YUMMY¹

The original study is called *Yummy Yummy* (Dutch Smikkel, German Schlemmy Schlemmy; Rijlaarsdam et al., 2008, 2009) following a key element that students were asked to write about – *Yummy Yummy* snacks. The intervention program was designed for learning-to-write lessons emphasizing the acquisition of pragma-linguistic knowledge and identifying the factors that make a text effective (Rijlaarsdam et al., 2008, 2009). We will briefly describe the series of lessons and present the underlying rationale of the program.

Sixteen grade-7 students were asked to write a persuasive letter to a business company. They were randomly assigned to one of two conditions. One condition simulated the company board and served as readers, reviewing a few letters and discussing which letter was most convincing. A second condition simulated researchers who observed the readers and analyzed the evaluation criteria they used to select the best letters and prepared a poster of their findings. The researchers then presented their posters to the classroom plenum, and “board members” presented

¹ Basis materials are available from Braaksma, & Rijlaarsdam (2016).

their choice of the most convincing letter and read aloud the winning letter. Below is a list of the lesson series, including the rationale that underpinned their design.

2.1 Lesson 1: Writing a first version of the letter

In this lesson participants received information about what they had to do in the upcoming lessons. The teacher presented the case to all students, giving the following instruction:

'Yummy Yummy candy bar' writing activity, [add date]

Imagine:

You are a real fan of *Yummy Yummy* candy bars. One day you read the following advertisement:

Save up for two free movie tickets!

How to get them:

On the wrapper of each *Yummy Yummy* candy bar, you will find one saving point. Save ten points. Send the points in an envelope to *Yummy Yummy* Saving Action [add address that fits in the national context].

Include a stamp of 37 cents for the mailing costs. Clearly note your name, address, town/city, and zip code. The two free (FREE!) movie tickets will be sent as soon as possible to your address.

This offer ends on [add date: must be later than the date of the lesson].

It is [add date of the day of lesson 1]: Now you have saved eight points. Nearly all ten points required! But you cannot find any more *Yummy Yummy* bars with points on the wrapper, although it isn't [add the final offer date as advertised]. You tried different shops. Strange! You can't collect ten points! But you still want to get the two free movie tickets. Therefore, you decide to send your eight points and two *Yummy Yummy* wrappers without points.

Write a letter to the *Yummy Yummy* company and send it with your eight points and collected wrappers. In your letter, explain why you cannot send ten points. Convince the *Yummy Yummy* company that it isn't your fault that you didn't collect ten points, and that you still want to receive the two movie tickets. Be sure they send you the tickets!

After explaining the topic of the persuasive letter, the students wrote to the company.

2.2 Lesson 2: Board members (readers) select letters/Researcher (observers) collect data

- 1) The class was divided into small groups and given instructions on their tasks. Two board members (readers) selected two letters out of a bundle and two researchers (observers) observed their discussion and collected all arguments and criteria used for selection.

- 2) After the board members selected the winning letters, the researchers met to discuss the findings and created a poster with the used criteria. Then, board members composed a letter to the authors who were not selected.

Readers selected the two most convincing letters based on their own different perspectives. This enabled developing diverse perspectives on the quality of the text. The task of the researchers was to study the criteria for effective texts the board members used when selecting the letters, to generalize them, and present them in a poster.

2.3 Lesson 3: Presentation of results

In this lesson, the researcher team was asked to present their conclusions and detail what selection criteria board members used, summarizing their findings on posters (collated on the blackboard). The other students listened and made notes (to improve their writing the following lesson). Then, board members presented the winning letters, reading them aloud and explaining why these letters were the best, relating their arguments to the posters on the blackboard.

2.4 Lesson 4: Revision/rewriting of your letter

Participants received the letter they wrote in the first lesson and a revision planning scheme in which there were two questions: (1) What elements of the letter are you satisfied with? (2) What would you like to change? They had to decide whether they could make revisions to improve their writing and went off to the to revise/rewrite their letters and sent them to the teacher. After revision, students were asked to determine whether they were satisfied with their second draft and to justify their determination.

2.5 Lesson 4/5: Evaluation

After completing their second draft, all students were asked to fill in an anonymous self-report questionnaire on their impression of the *Yummy Yummy* lesson series (see appendix C). The questionnaire was based on the Learner Report (De Groot, 1974), a didactic tool for evaluating programs that offers many options for gathering information related to "learning about oneself" (van Kesteren, 1993). The student is addressed as an expert who can evaluate the effects of learning (De Groot, 1980, p. 178). Therefore, the students' perceived learning (Barzilai & Blau, 2014; Caspi & Blau, 2008, 2011) constitutes a component from which one can understand the process itself.

The questionnaire consisted of 11 questions. The first nine questions consisted of two parts. The first was a multiple choice following an open question in which they were asked to explain their quantitative answer. The two last questions had only a

quantitative part, in which students were asked to rate their overall evaluation of the *Yummy Yummy* sessions.

Following the *Yummy Yummy* lesson series, the class teacher assessed both writing versions (pre- and post-intervention) in terms of presence of a number of elements in the text (see Appendix B). So far, we have described the lesson series of the original study's intervention program. Appendix A shows the sequence of the lesson series: activities and goals.

3. THE PRESENT STUDY

3.1 *Research questions*

Our study is guided by two sets of research questions. The first set (questions 1-3) deals with the findings of the original study. The second (question 4) forms an extension of that study.

3.1.1 *Text quality*

RQ1. Does the intervention result in improvements of texts after revising/rewriting, and is the improvement more significant among observers compared to readers?

RQ2. Does the intervention especially affect the rhetorical elements of the revised texts?

3.1.2 *Level of interest*

RQ3. Do role conditions result in different degrees of interest in the *Yummy Yummy* lesson series among students?

3.1.3 *Learning paths*

RQ4. Did the two groups experience different learning outcomes? Next to text quality, students' perceptions function as outcome of the study: differences in valuing certain elements of the lessons related to the role of the learners in the lesson series can explain differences in the effects of the lessons on text qualities.

4. METHODOLOGY

4.1 *Replication*

There are different types of replications, such as exact or literal replication, which requires an examination of the same objects used in the original study, and a closer replication where the essential actions in the original study are performed carefully,

but one or two non-central variables are changed to allow a comparison between the two studies and their results (Porte & Richards, 2012). There is probably no possibility of accurate replication, as there will inevitably be differences in the conditions of the studies. Hence, in this study we conducted an approximate replication to provide some flexibility to adapt the replicated study.

The purpose of this type of replication is examining whether original small-scale results are valid and can be generalized (such as to a new population), enabling accumulating more knowledge about the intervention program, and verifying what was originally observed on a valid and reproducible scale. In our case, differences between original and replicated studies mainly relate to sample size and the number of participating teachers in the experiment and are primarily reflected in the manner in which the questionnaire was completed.

4.2 *Sample*

The original study consisted of 16 participants and one teacher. The sample was extended to achieve a broader generalization testing the effectiveness of the instructional writing practices. The aim of this replication is to show whether the original study results are generalizable when, among other factors, the sample is changed and extended.

The current study included a convenience sample (n=210, 53% boys) of Hebrew L1 speakers consisting of eight grade-7 classes (aged 12-13) in seven middle schools in Israel. It represents different parameters: geographic periphery-center, low/high SES, religious/non-religious, single-gender or mixed-gender schools, and so forth.

In the original study, the lesson series was carried out by Braaksma, a teacher-researcher who co-conducted the study and implemented the intervention program. In the current study, we approached twelve Hebrew language teachers from Hebrew L1 speaking schools to take part in the study. Seven of these, all experienced teachers with an average of 15 years of professional experience, volunteered to carry out the intervention program in their classes (each including approximately thirty students). In the original study, the lesson series consisted of four lessons of 45 minutes, totaling 180 minutes. Due to the larger size of the classrooms in the present study, the total time devoted to the whole intervention program was increased to approximately 220 minutes to enable more time for discussion and presentation of the posters.

4.3 *Fidelity of implementations*

Implementation fidelity indices are crucial to assess the internal validity of an experiment (O'Donnell, 2008). As the power of intervention studies lies in their effect on teaching practices, it was important that the teachers carry out the intervention while preserving the research fidelity (de Smedt & van Keer, 2016). We adopted

guidelines suggested by Graham and Harris (2014) to ensure the intervention was implemented as precisely as possible in adherence to the various research stage goals. In this study, we controlled the understanding of teachers of the instructional design via a pilot (see ii below) in which they planned the instructional design and received feedback from the research team based on classroom observations. In total, we included four actions:

- 1) A 20-hour in-service workshop conducted over four days for all participating teachers that presented theoretical knowledge about learning through observation and role theory. The teachers experienced all stages of the process as learners and received specific instruction regarding the intervention procedure in class.
- 2) Class pilots: Following the workshop, each teacher was asked to conduct a complete pilot program in one class that would not be participating in the study to ensure mastery and understanding of all stages of the research. All pilot classrooms were observed and corrected when necessary.
- 3) Instruction refinement: Teachers returned from their pilot work with questions and insights, and we revised the instructions for the entire group accordingly.
- 4) Attending research classes: All researchers and research assistants attended lessons in research classes to ensure the research stages were implemented as planned. We expected the teachers to follow the plan as prescribed, not providing any instruction to the students. From these classroom visits no formal data were collected.

4.4 Materials

The writing task used in the current study was the original wording of the assignment translated to Hebrew (with a different destination address for the letter).

4.4.1 Assessment of the pre- and post-intervention writing products

The writing task was adapted from the first national assessment study on language education conducted in the Netherlands (Zwarts et al., 1990). For the text quality rating the original *Yummy Yummy* study extended the original assessment tool. Appendix B presents the 12 binary classified items (absent/present) that pertain to several aspects of the text: purpose (item 1: request), necessary content elements (items 2-5), argument (item 6), rhetorical moves (items 7-10), and two items to weight the quality of formulations that hinder understanding and the main argument.

In the original study, the teacher-researcher who taught the class assessed the two versions of the complaint letters written by the students. In the current study, pre- and post-intervention writing products were qualitatively and quantitatively

assessed using the set of items used by the Dutch team (see Appendix B) by three raters independently.

Students typed first and second versions of the letters. Real names were replaced with codes. Three experienced (10-15 years) language teachers unfamiliar with the purpose of the study scored all first and second versions (N=420) independently, without being told which version they were assessing. Prior to rating, all three raters underwent a 4-hour training session conducted by the researchers that included a discussion of the assessment items and practice scoring of 21 random sample letters (5% of the total number of letters).

Ratings were highly reliable. Fleiss kappa with three raters per item ranged from .90 (item 11/version 1) to 1 (items 4,5/version 1, items 2,5, and item 7/version 2) with a mean of .96 (version 1) and .97 (version 2).

4.4.2 *Questionnaire on interest, usefulness, and instructiveness*

We administered the same questionnaire of the original study, translated to Hebrew and amended. However, data collection differed from the original study in which the teacher let students complete the questionnaire and analyzed the findings. In the replicated study, students completed an online Google form questionnaire sent to their cellular phones and were notified their responses would go directly to the researchers.

The 11-item questionnaire included one identification item (condition: board member or researcher), four on ease of certain key activities, two on interest in key learning activities, and one on the usefulness of a key activity. The other three questions asked for responses on the whole learning unit: how much they learned in the lesson series, a holistic evaluation of the series, and their interest in the series. All questions were scored on a 5-point Likert scale, except Question 9#, scored on a 4-point Likert scale. All questions were statistically analyzed.

Students submitted their responses within one day and remained anonymous, disclosing no identification mark for teachers, schools, or other students. When we received the first responses, we discovered that Question 10# was omitted and immediately sent a link of the corrected questionnaire to the teachers. However, there were students who had already submitted the questionnaire and their anonymity made it unfeasible to ask they resubmit their responses. Consequently, the number of responses for this specific question is lower (N=103). Question 9# (how much was learnt) was followed by an open question in which students described what they learned when adapting the Learner Report technique as proposed by De Groot (1980). We added a content analysis to the second part of this question, resulting in four categories (Appendix D presents examples from student responses for each of the four categories).

Question 9#, scored on a 4-point Likert scale, asked students to rate their measure of learning from the lesson series: (a) very little; b) little; c) much; d) very much), followed by a prompt to explain: "Because.....". We distilled three main categories

of responses from the open-ended question: (1) interest (“It is very interesting to learn this way”); (2) collaborative learning (“I learned a lot from the group”), and (3) metacognitive knowledge. The last category was classified into two types of metacognitive knowledge acquisition processes: (a) declarative knowledge (Anderson, 1995, p. 234) or conceptual knowledge (on facts and objects) (“I learned a lot from looking at the board group, and now I know much more”: see Appendix D), and (b) procedural knowledge pertaining to performing the action sequences needed to complete the assignment (“I learned that you must not threaten the company if you want to convince it: see Appendix D) (Canobi, 2009; Rittle-Johnson et al., 2015). Three raters rated all 210 responses, applying the instructions we composed based on our initial analysis. Fleiss Kappa measurements for the four categories was sufficient with a mean of .78, running from .70 to .97.

5. ANALYSIS

5.1 Preliminary analyses

We examined the equivalence of role conditions for initial text quality. A multilevel model with intercept and two random components (class, and individuals within classes) showed no effect of role on the set of 12 items ($F(1, 203.430) = .015, p = .901$). We also checked the structure of the 12 text quality items. In the original study, the sum of scored items was reported without further statistical backing due to the small sample. A scale structure check revealed that the binary classified set of items did not form a sufficient reliable scale (Cronbach’s alpha pretest .56, posttest .64). The median correlation between test-retest (pre-posttest) on item level was .62 (without outlying item 3 ($r = .045$) median $r = .67$), which indicated relatively reliable item scores. While the measurement on item level showed to be stable, the set as a whole did not represent a text quality construct as a whole, we decided to test the effect of the intervention and role condition on item level. This option would provide us with insight regarding which items were sensitive to the role condition.

5.2 Text qualities

5.2.1 Main analyses

We tested effects of revision (RQ1) and the differential effect of role on progression (RQ2) effect in one model. While participants were nested in classes, we applied multilevel analyses with two random components (classes and individuals nested in classes) and three factors (role, measurement occasion, and item). When the model with an interaction term between role, occasion and item proved to better fit the data without such an interaction, we analyzed the data per item to detect which items were sensitive to the role effect.

The questionnaire data about student perceptions of the key-learning activities and the whole program was tested for differences as results of the role condition, assuming differences may indicate different levels of implementation, and might explain differences in learning gain, in term of text qualities (RQ3).

The open question on amount of learning gain (RQ4) was given particular attention and further tested to examine whether difference in role condition is related to student descriptions and explore whether difference in learning gains might be explained by different uptakes.

6. RESULTS

6.1 Text quality: Effect of the intervention and the role condition

We compared two models to test whether the effect of measurement occasions varied per role condition, and whether this effect varied across items. A model with three mean factors and two-way interactions was less applicable to the data than a three-way interaction model ($\chi^2(11) = 31.201, p = .001$). Table 1 presents the means and standard errors estimated under this model for both measurement occasions. Subsequent pairwise comparisons showed positive effects for items 3 ($p = .013$), 4 ($p = .031$), 5 ($p < .001$), 6 ($p < .001$), 8 ($p < .001$), 9 ($p < .001$), and 12 ($p < .001$). Text quality improved after the intervention when students revised or rewrote their initial version. The table shows the percentage of accurate responses and the standard errors.

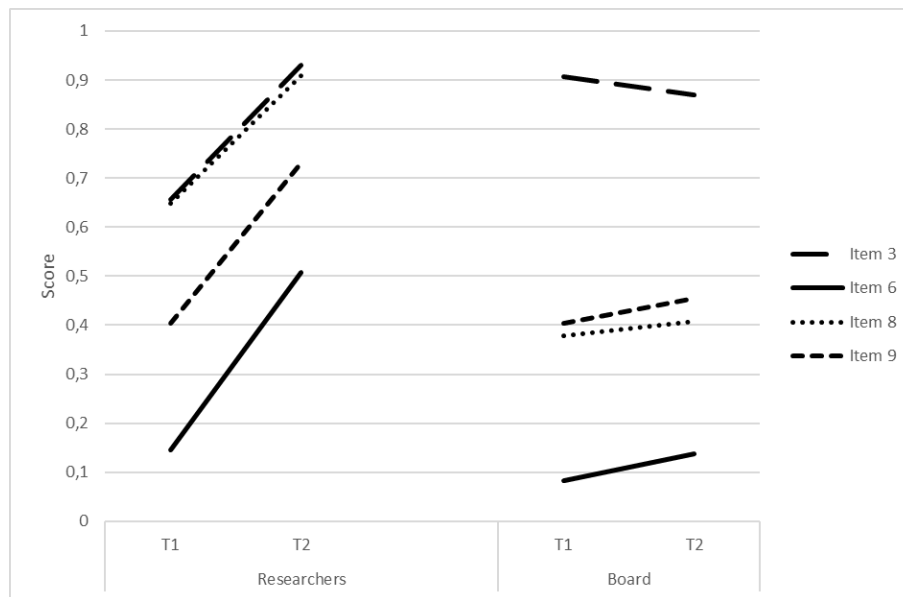
Table 1. Scores of text elements (12 binary classified items). Means (proportions) and standard errors before intervention (version 1) and after intervention (version 2). $N=206$.

Item	Text version			
	1		2	
	M	Se	M	Se
1 Request to send cinema tickets	0.91	0.02	0.90	0.02
2 Free cinema tickets	0.85	0.03	0.83	0.03
3 8 points included	0.79	0.05	0.91	0.05
4 Two wrappers included	0.65	0.06	0.74	0.06
5 Explanation for two wrappers	0.63	0.06	0.81	0.06
6 Argument: action still runs	0.13	0.03	0.34	0.03
7 Rhetorical extra: appeal to reader to comply with a request	0.92	0.02	0.93	0.02
8 Author has made effort to find wrappers with points	0.58	0.06	0.72	0.06
9 Rhetorical extra: author compliments <i>Yummy Yummy</i> for the savings action	0.40	0.05	0.59	0.05
10 Quality <i>Yummy Yummy</i> bars/favorite etc.	0.42	0.05	0.50	0.05
11 Malus: diffuse, unclear formulations	0.72	0.06	0.80	0.06
12 Malus: date of ending savings action is not included	0.37	0.06	0.65	0.06

The same analysis applied to all four of these items revealed the effect of measurement occasion was larger for observers compared to readers (RQ2): item 3 ($F(1,$

409.321) = 10,864, $p = .001$), item 6 ($F(1, 406742) = 16,772, p < .001$), item 8 ($F(1, 408,577) = 8,135, p = .005$), and item 9 ($F(1, 409.647) = 9,427, p = .002$). Figure 1 shows the differences between the two conditions for these four items.

Figure 1. Effects of learners' role for six items on progress from T1 to T2.



The items that obviously were sensitive to role conditions were crucial items for the letter's receiver to understand the sender's objective. Item 3 explained that the letter included eight points (and not the required 10 points).

Three additional items were respectively argumentative, or persuasive. Item 6 is crucial in the rational argumentation, stating that the action is still ongoing, while no more marked wrappers can be found. Items 8 and 9 aim at persuading the reader; authors highlight that they have done everything to search for marked wrappers (Item 8) and flatter the *Yummy Yummy* company for running this savings action (Item 9). Figure 2 presents some of the items in the first and second versions of a letter written by a single student.

Figure 2. Student X: Pretest and posttest letters

First version/pre-intervention	Second version/post-intervention
<p>To the Board of <i>Yummy Yummy</i></p> <p>Shalom</p> <p>I took part in the campaign, but now we can't find any more wrappers. I searched and did not find I ask you to send me the price. It is not my fault that I didn't find. If you don't send it I and my friends will stop buying your bars.</p>	<p>To the Board of <i>Yummy Yummy</i></p> <p>Shalom rav*,</p> <p>My name is... I and a friend of mine took part in your campaign. In the campaign we were supposed to collect 10 wrappers with points. But we collected 8 wrappers not because this was what we bought but because no wrappers were left. You obviously understand how disappointed we were. We looked in many places and did not find. Even our parents looked in another city. We will be glad if you change the conditions of the campaign and send two tickets for free to those who collected eight wrappers. In this way we will all be happy and continue to buy your bars. We are convinced you want all people to be satisfied. You are a serious company. Respectfully <i>Yummy Yummy</i></p>

*"Shalom" (literally "peace") is a Hebrew greeting while "Shalom rav" is a more formal and respectful version.

6.2 Students' perceptions and evaluations

6.2.1 Key learning activities

Four key learning activities questions pertained to measures of difficulty, usefulness, and instructiveness. Results for both conditions are presented in Table 2. Overall, scores for these four activities ranged between neutral (3) and positive (4), with no apparent effect of conditions, except for interest in the third key activity (presenting the posters and listening to the winning letters).

First version: Writing the first version (Q1) was not considered difficult by the respondents ($M = 3.33$, $sd = 0.86$). No differences were found between the two conditions.

Evaluating and inquiring tasks: Activities during the board discussion session in which students were assigned one of two roles were relatively easy ($M = 3.7$, $SD = .96$) and only moderately interesting (Q4: $M = 3.33$, $sd = 1.01$). No differences were found between the two conditions.

Presenting posters and reading winning letters: These tasks (Q5) were found to be highly instructive and useful ($M = 3.49$, $sd = 1.13$) and moderately interesting (Q6, $M = 3.32$, $sd = 1.21$). Findings indicate researchers ($M = 3.56$, $sd = 1.23$) were more

interested in this task than board members who reported only moderate interest in task performance ($M = 3.09$, $sd = 1.14$) ($t(208) = 2.803$, $p < .01$).

Second version. Students found *thinking about* writing the second version (Q7) relatively easy ($M = 3.8$, $sd = .65$). However, *writing* this version (Q8) was found to be only moderately easy ($M = 3.37$, $sd = 1.12$). No significant differences were found between researchers and board members.

6.3 Overall evaluations

Responses to the three questions on the lesson series as a whole were positive. Overall evaluation scored 7 out of 10, which is more than sufficient. Interest scored 3.4 ($sd = 1.7$), between neutral and positive, with researchers responding significantly more positively than board members. Students responded more positively than neutral (4-point scale) when assessing how much they had learned ($M = 2.7$, $sd = .9$), with researchers responding significantly more positively than board members.

Table 2. Students' evaluations of key learning activities and the learning unit as a whole for both role conditions

	Total sample (N = 210)	Board (N = 106)	Researchers (N = 104)	t (df = 208)
Q1 Ease of writing 1st version	3.27 (0.79)	3.21 (0.70)	3.33 (0.86)	1.099
Q3 Ease of evaluation and inquiry task	3.70 (0.96)	3.60 (0.95)	3.81 (0.96)	1.548
Q4 Interest in evaluation and inquiry task	3.34 (1.07)	3.33 (1.01)	3.36 (1.12)	0.174
Q5 Usefulness and instructiveness of posters presentation & reading winning letters task	3.49 (1.13)	3.36 (1.16)	3.63 (1.08)	1.750
Q6 Interest in posters presentation & reading winning letters	3.32 (1.21)	3.09 (1.14)	3.56 (1.23)	2.830**
Q7 Ease of thinking about 2nd version	3.84 (0.65)	3.77 (0.64)	3.91 (0.66)	1.569
Q8 Ease of writing 2nd version	3.28 (1.10)	3.20 (1.08)	3.37 (1.12)	1.103
Q9 How much was learned during lesson-series (1-4 min.)	2.69 (0.92)	2.53 (0.92)	2.86 (0.90)	2.615**
Q10 Interest in lesson series [^]	3.42 (1.07)	2.84 (0.80)	3.58 (1.08)	3.752**
Q11 Lessons: Overall evaluation (min 1 - max 10)	7.24 (2.46)	7.14 (2.39)	7.34 (2.53)	0.574

* $p < 0.05$, ** $p < 0.01$ when no information is provided: min 1 – max 5

[^] 103 Valid answers: Board N=25, Researchers=88

The third research question (RQ3) relates to the degree of interest the students reported in the *Yummy Yummy* lesson series according to their self-report questionnaires. Current study findings indicated researchers showed more interest ($M = 3.58$,

$sd = 1.08$) compared to board members ($M = 2.84$, $sd = 0.8$) when answering this question.

6.4 Exploration: Explaining reported learning gains

The next step in the study entailed using questionnaire data to explore whether role conditions created differences in learning experiences. First, we relate the accounts for learning (Q9) with the role condition (Table 3).

Table 3. Categorized students' explanations for how much they learned during the Yummy Yummy lesson series: Frequencies (left panel) and percentages (right panel). Effect of Role; χ^2 ($df=3$) 18.03*, $p < .001$

Explanation of learning	Total (N=210)	Board (N=106)	Researchers (N=104)	Total (%)	Board (%)	Researchers (%)
Declarative knowledge	69	48	21	32.7	45.1	20.4
Procedural knowledge	89	35	54	42.4	33.3	51.5
Interest	34	11	22	16.1	10.8	21.4
Collaborative learning	18	11	7	8.8	10.8	6.8
Total	210	106	104	100.0	100.0	100.0

Fout! Verwijzingsbron niet gevonden. 4 indicates that responses were not evenly distributed between the two roles. More than half of the researchers (51.5%) explained that they acquired knowledge through a procedural process compared to 33.3% of board members, whereas 45.1% of researchers reported a declarative knowledge construction process compared to 20.4% of the researchers. In these two categories, the two conditions displayed statistically significant disproportional differences ($\chi^2(1) = 13.26$, $p < .01$). Board members tended to explain the amount of learning by indicating a declarative knowledge process, while researchers reported a procedural process.

Another investigated issue pertained to differences in reported learning experiences relating to perceptions, specifically students' measure of interest in the Yummy Yummy lesson series. We ran on the subsample of participants that indicated the declarative or procedural knowledge reason for learning much a multivariate analysis with role and explanation as factor and all items for the questionnaire (Table 2, minus Q10 because of the missing data due to technical failures) as dependent variables. Pillai's trace was significant for the two main effects, but not for the interactions (effect of role = .163, $F(9,141) = 3.040$, $p = .002$, $\eta^2 = .163$; effect of explanation = .150, $F(9,141) = 2.755$, $p = .005$, $\eta^2 = .150$; interaction effect = .130, $F(9,141) = 1.792$, $p < .075$, $\eta^2 = .103$). Subsequent univariate analyses showed that the role effects regarding Q3 (ease of evaluation and inquiry task) and Q8 (ease of writing 2nd version) are both higher among researchers. The effect of type of explanation included five items all in favor of the group that scored the procedural learning path

instead of the declarative path: Q4 (interest in the evaluation and inquiry task), Q5 (usefulness and instructiveness of posters presentation and reading winning letters), Q6 (interest in posters presentation and reading winning letters), Q9 (amount of learning), and Q11 (overall lesson evaluation, for which the declarative group scored much lower) ($M = 6.11$, $sd = 2.8$) than the procedural group ($M = 7.54$, $sd = 2.0$).

7. DISCUSSION

This replication study was designed to examine the effectiveness of the *Yummy Yummy* intervention study (Rijlaarsdam et al., 2008, 2009) in a larger sample and a different language to determine whether the results of one study would be valid and applicable to a new population. The intervention program was intended to teach good writing practices, emphasizing pragma-linguistic knowledge acquisition, specifically: what makes a text effective? All roles of the student-participation (role theory) model were included: students as participants in communication (writers and readers) and students as observers. The study focused on the role of observational learning in revision and enhancing audience awareness through a persuasive writing task.

One finding that relates to the writing products of both conditions that is consistent with original study findings indicates significantly improved writing products in the second version (following intervention). We attribute this finding to the nature of the intervention program, as the *Yummy Yummy* lesson series requires that students play different roles and practice communication, particularly the effects of written communication. Readers (board members) were not restricted to reading and observers (researchers) did not just observe. Board members also made decisions based on reasoning, and researchers identified arguments, discussed overlaps, and presented them to the class. Both conditions seem to have been affected by learning-to-write processes.

An additional finding relating to the writing products of observers is in line with previous studies that showed their advantage over readers, particularly in the domain of rhetoric (Braaksma et al., 2004; Rijlaarsdam et al., 2008, 2009). In the original study, the effect size of the researcher group was 1.30 compared to 0.30 of the board group (Rijlaarsdam et al., 2008 p. 63, 2009 p. 445). Similarly, the effect size of the current study researcher condition was 0.95 compared to 0.29 for the board condition. These findings suggest that researchers improved more significantly. The insight we draw from this is that observational learning has a distinctly enhancing impact on the writing performances of the observer students.

This finding is inconsistent with results presented by Moore and MacArthur (2012) demonstrating no difference between readers' and board members' writing products. Nevertheless, there is now more evidence for the *Yummy Yummy* conceptual replication yielding similar results. We would like to offer explanations that may resolve this discrepancy. The first refers to participants' age, as the authors suggested. Moore and MacArthur's sample consisted of grade-5 students, whereas the original and the present study samples were comprised of grade-7 students.

Moreover, the intervention program of the present study took place at the third quarter of the school year. Studies dealing with writing development show that in elementary school, particularly in grades-4/5, students focus primarily on the basic technical aspects of writing and rarely engage in the organization of writing processes. They usually do not make changes related to structure, content, or organization of texts, but rather make superficial changes (Berninger et al., 1996). Compared to elementary school children, most secondary school students begin to be more aware of the global structure of texts and are able to plan content according to text goals. They may even consider questions about the message and meaning conveyed to readers (Lin et al., 2007). As our findings reinforce the original study (Rijlaarsdam et al., 2008, 2009), which showed a substantial improvement of writing products following observation, it seems that Moore and MacArthur's suggestion that student age affected revision quality can explain the different results and might be an outcome of the late literacy development (Ravid et al., 2016).

Another possible explanation addresses the experience of writing a persuasive text. Moore and MacArthur mentioned in their study that the students had no previous experience in argumentative writing. Conversely, the original and replicated studies involved grade-7 students already experienced in persuasive writing as part of their curriculum. Thus, it is possible that this experience enhanced the impact of observation and allowed participants better generalize on those elements that make texts more effective.

Another factor that may have impacted the different results was that researcher-students perceived their task as rather attractive, required to present their findings with posters. For Hebrew speaking students, posters are understood to be a visual presentation, and many were highly motivated to both decorate their posters and prepare to present them (see Appendix E). This impression was reinforced in their evaluation of the intervention. Moreover, their discussion of possible poster items included debate of criteria, so observers engaged in meta-communication. Thus, presentation of posters to their class plenum could have led to further internalization of meta-cognitive moves and self-regulatory writing processes and to an increased motivation to gain general insights. This may suggest that this type of intervention is suitable for the late literacy developmental stage (Ravid et al., 2016) with students benefiting more from such a program in middle school.

We provide two additional suggestions for the improvement of the observer condition. First, observation was initially individual, perhaps providing observers the opportunity to develop deeper insights regarding criteria as they were not involved in discussions and could concentrate on what was actually said. They could, in a sense, "observe themselves" by watching others read aloud, thus conducting a kind of internal dialogue comparing one's own writing to the writing of others. Readers were not afforded this opportunity as they were active during discussions, keeping track with the group interaction and ranking letters and their attention was focused on the texts they read and not on their own writing.

Second, observers had the opportunity to see how readers reacted to texts, enabling them to acquire tangible knowledge about their readers, their communicative needs, and behaviors. They could witness, explore, and learn how their texts affect real readers and how readers actually absorb and respond (Couzijn & Rijlaarsdam, 2004, 2009; Crasnich & Lumbelli, 2005; Lumbelli & Paoletti, 2005). Observers watched the discussion and listened to the arguments of readers as they chose the most convincing text. This knowledge helped them considerably improve their second version. It seems observing readers helped them predict potential problems regarding quality of reasoning (the rhetorical aspect being one example). This explanation is consistent with the original study (Rijlaarsdam et al., 2008, 2009) and corroborates an earlier study examining the impact on writers who become acquainted with true readers (Couzijn & Rijlaarsdam, 1996).

It therefore seems that separating the act of observation from the writing itself and placing a focus on observing real readers helped students formulate criteria for optimal persuasive writing. Though we cannot determine with certainty that the component of observation itself led to the different results between observers and readers, we suggest that these factors may have made the revision more effective and yielded better writing outcomes in observers relative to readers.

The following finding relates to an improvement in the rhetorical aspect. As mentioned, the original study's authors found a prominent advantage in the rhetorical aspect of the observers' second version. This tendency was confirmed in the present study (see Table 1 and Figure 1). The explanation lies in the writing task and question posed to observers. Both studies focused on a persuasive writing task in which rhetorical elements are essential. Moreover, in both studies observers watched real readers who discussed the choice of the most compelling letter. The discussion focused on the letters' target audience and rhetorical aspects of writing derived from the communicative goal of the writing task. Thus, writers could acquire information changing their previous knowledge level (Graham & Harris, 1994), including knowledge of reader perspective and audience awareness. We assume that these aspects influenced the researcher-students; they are reflected in their revision process, in which they developed audience awareness and considered their recipients in the process of persuasion. All these affected the quality of the revised texts, resulting in observers outperforming readers in rhetoric, as made evident in higher audience awareness.

Students' approval of the lesson series was also reviewed. In the original study, both observers and readers rated the lesson series relatively highly (8 out of 10). In the present study, degree of satisfaction was rated 7.2, a relatively low result compared to the original study. However, in terms of research in Israel, this is considered a particularly high result. This is evident from national Israeli exams that test students' language skills in writing (including articulating an argument), which also include a self-report 2-item questionnaire: (1) To what extent do I enjoy language lessons? and (2) To what extent do I like to write? In the 2016 questionnaire, of the 20,313 grade-8 students that completed the exam, only 44% of students reported

that they enjoyed language lessons, and 34% reported they liked to write. A similar trend is also evident in 2018, in which 49% of the total 21,374 participating students reported enjoying language lessons and only 27% reported that they liked writing. These numbers are very low, and largely indicate disapproval of the way students experience their language lessons. Therefore, the finding of 7.2 relating to the whole lesson series can be considered quite high, indicating that students had a different experience during the intervention program.

We surmise that the reason for this relatively improved evaluation lies in the shift away from traditional teaching practices. Both conditions experienced a meaningful learning task that inspired and stimulated genuine dialogue on relevant content. The case of *Yummy Yummy* rests on the meaning of the letter of complaint, in an appropriate setting for students at that age (Rijlaarsdam et al., 2008, 2009). Although the two conditions enjoyed the lesson series, a significant difference was found between the much higher levels of enjoyment of researchers when compared to board members.

We chose to delve deeper into the analysis that arose from question 9 of the questionnaire, addressing the degree of perceived learning students gained from the lesson series and in justifying their choice. This yielded categories that we did not anticipate resulting from the content analysis of student self-reports. Of particular interest are two categories: *declarative knowledge and procedural knowledge*. We found significant differences between the two conditions: observers more frequently reported acquisition of procedural knowledge compared to readers, who reported higher levels of declarative learning. This suggests that the *Yummy Yummy* lesson series motivated relatively more observers to higher-order learning processes, such as procedural knowledge.

The meta-cognitive aspect has long been mentioned in studies dealing with observational learning (Braaksma et al., 2004; Coirier, et al., 1999; Oostdam, 2004; Rijlaarsdam et al., 2008, p. 58). We speculate that the focus allowed to observers through their single task (not required to complete letter selection or writing) may have provided these students with the opportunity to deepen their knowledge and refine their procedural knowledge. This explanation is consistent with previous descriptions: Rijlaarsdam et al., (Braaksma et al., 2004; Rijlaarsdam et al., 2008, 2009) presented the advantages of observational learning and empirically demonstrated how these advantages led to the self-perceived acquisition of procedural knowledge. Learning can be separated from task implementation and can provide a space for processing procedural knowledge due to less burden on work memory (Groenendijk et al., 2013). The observation act and subsequent production task implicitly enabled students to process knowledge through their preoccupation with comparing reader reactions and materials between their first and second draft. This explanation confirms the explanation provided by Braaksma et al.: "The more that (observing) students can pay attention to learning (rather than sharing attention with ongoing writing attempts), the more students are able to change and deepen their knowledge"

(Braaksma et al., 2004, p. 4). Observation involves active listening, enabling observers to extract principles and patterns of text efficacy.

It seems that the observational learning embedded in the intervention directly altered knowledge of task schemas and knowledge of genre. By experimenting with meta-cognitive strategies, observers may have internalized distinctions required for effective writing, acquired genre knowledge, and absorbed procedures of writing. This process may have led to the transformation of declarative to procedural knowledge by turning it into an automatic knowledge (Johnson, 1994). Automation in writing occurs when procedural knowledge is present, meaning when learners understand the nature of persuasion. For example, in our study students identified the need to compliment the company or avoid threats—not because it was written in a textbook, but due to observing readers that successfully improved their persuasion skills. This insight enabled observers to integrate these understandings in their second draft with no external instruction. Students developed the communicative-dialogic aspect of writing, evidence of higher order thinking.

7.1 Summary and implications for writing instruction

The case of *Yummy Yummy* demonstrates that language lessons can be effectively divided into the various roles of writer, reader, and observer. Students must learn how to write functional and communicative texts, employing appropriate rhetorical strategies for certain audience types and different writing processes in different circumstances, reflecting their writing behavior and expanding their learning-to-write ability (Braaksma et al., 2004; Rijlaarsdam & Couzijn, 2000; Rijlaarsdam et al., 2008, 2009). This requires that students master future writing tasks and therefore must learn differently from how they are currently taught.

The *Yummy Yummy* intervention program addresses several key challenges; it allows students to acquire sub-skills within the writing process and learn to regulate the process in its entirety. This provides the possibility of acquiring strategies, conducting active observation, and making comparisons (Rijlaarsdam et al., 2013) that may increase genre knowledge and knowledge about writing in addition to acquiring greater procedural knowledge on how to approach writing tasks.

Many writing tasks in school often lack an authentic audience and purpose; roles in writing lessons are limited to readers and writers, with no option of experiencing the role of observer. While students observe readers in real time and listen to their peers' thinking aloud, they can gather information about what works in the text. Unlike traditional learning where writers gain knowledge from teachers and their guidelines on text efficacy, observation extends the learning process as it involves conceptualization, re-evaluation of writing behavior and work methods, and refining strategies for new writing tasks (Braaksma et al., 2001, 2004; Couzijn, 1999). Switching between writer, reader and observer roles in writing lessons allows students to experience each and enhances their audience awareness (Rijlaarsdam et al., 2009), thus prompting interactive-social acquisition of knowledge. Furthermore, observing

real readers is helpful to acquiring self-regulation skills and writing strategies as it encourages students to transfer their existing meta-knowledge to current writing processes (Fidalgo & Torrance, 2017).

It seems teachers may benefit from understanding the principles of role theory and observational learning as a pedagogical mindset, transforming classes into learning communities and teachers into instructors. Another equally important implication of this study pertains to form, content, and context of writing assignments. Components such as relevance to the reader's realm, writing goal clarity, social interaction, and the authentic writing product required of students may affect their willingness to allocate cognitive effort to learning-to-write rather than to writing.

A limitation of this study concerns the impossibility of verifying what intervention element specifically yielded improvement (observing readers or the conceptualization and generation of posters). Future studies may require readers to produce posters to neutralize the potential influence on findings, and perhaps also establish an observer condition whereby students do not generate posters to separate the effects of observation vs. poster generation. Another limitation stems from the single writing assignment; a follow-up study may benefit from requiring at least two writing assignments (one conducted during intervention and another after several weeks).

ACKNOWLEDGEMENTS

We would like to thank the editor and the anonymous reviewers for their suggestions to improve the paper, and Huub van den Bergh and Sven De Maeyer for their statistical advice. Special thanks to all the participating schools, teachers and students and to the raters of the texts.

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APPENDIX A. ORIGINAL STUDY LESSON PLAN

Lessons	Phase/Scene	Activity	Aim	Function/Act
1	Orientation	Introduction of case	Building task representation	Producing texts for data/knowledge construction
2	Writing	Writing the letter -first version (all students)	Experiencing writing this type of letter	Constructing genre knowledge by inquiry
	Evaluating	Participating in a discussion about quality of letters as a simulated reader aimed at letter selection (Board teams)	Experiencing different perspectives on quality, building a repertoire of quality, building a representation of what constitutes a good text	
3	Observing	Observing the discussion in Board teams (Research teams)	Selecting criteria for effective texts: building a representation of what constitutes a good text	Applying extended knowledge
	Inquiry	Listing criteria on poster by sharing notes (Research teams)	Extending individual representation of good text principles by explicating criteria for effective texts	
4	Sharing information	Presentation and clarification of posters in the class referring to winning letters (Research teams)	Sharing pragma-linguistic knowledge 'in context' and relating criteria to text	Applying extended knowledge
	Rewriting	Revision: making a choice (revision or re-writing); planning what to change (all students)	Learning to plan a revision. Evaluating first version against new knowledge on effective texts	
4/5	Evaluation	Writing a second version of the letter (all students) Completing questionnaire; class planum discussion based on this data (all students)	Applying new (pragmalinguistic) knowledge in a text Reflection	

APPENDIX B. SCORING ITEMS

Items 1-10 (absent items scored: 0, included items scored: 1)

Item 11-12: When Malus=0, No Malus=1

1	Request to send cinema tickets
2	Free cinema tickets
3	8 points included
4	2 wrappers included
5	Explanation for two wrappers
6	Argument: action still runs
7	Rhetorical extra: appeal to the reader to comply with a request
8	Rhetorical extra: author has made effort to find wrappers with points
9	Rhetorical extra: author compliments <i>Yummy Yummy</i> for the savings action
10	Rhetorical extra: quality <i>Yummy Yummy</i> bars/favourite etc.
11	Malus: diffuse, unclear formulations
12	Malus: date of ending savings action is not included

APPENDIX C. QUESTIONNAIRE

1. I found the writing of the first version to the *Yummy Yummy* Management Board to be:

- a) very difficult
- b) difficult
- c) average difficulty (not difficult, not easy)
- d) easy
- e) very easy

What was difficult/easy?**2. In which group did you participate during lesson 2 and 3?**

- a) *Yummy Yummy* Management Board
- b) Research Group

3. I found the task during lesson 2 and 3 (selecting letters- *Yummy Yummy* Board; observing-poster report-Research Group):

- a) very difficult
- b) difficult
- c) average difficulty (not difficult, not easy)
- d) easy
- e) very easy

What was difficult/easy?**4. I found the task during lesson 2 and 3 (selecting letters- *Yummy Yummy* Board; observing-poster report-Research Group):**

- a) very boring
- b) boring
- c) average difficulty (not boring, not nice)
- d) interesting
- e) very interesting

What was boring/nice?**5. I found the presentation of the posters and the reading of the winning letters during lesson 2-3:**

- a) not instructive and useful at all
- b) a bit instructive and useful
- c) average
- d) instructive and useful
- e) very instructive and useful

What may or may not be instructive and useful?**6. I found the presentation of the posters during lesson 3 and the reading of the winning letters:**

- a) very boring
- b) boring
- c) average (not boring, not nice)
- d) interesting
- e) very interesting

What was boring/nice?**7. I found the thinking task about the writing of the second version:**

- a) very difficult
- b) difficult
- c) average difficulty (not difficult, not easy)
- d) easy
- e) very easy

What was difficult/easy?**8. I found the writing of the second version of the *Yummy Yummy* letter:**

- a) very difficult
- b) difficult
- c) average difficulty (not difficult, not easy)
- d) easy
- e) very easy

What was difficult/easy?**9. Please complete the sentence: "I have learned _____ from this lesson series:**

- a) very little
- b) little
- c) much
- d) very much

because:

10. I found the whole lesson series:

- a) very boring
- b) boring
- c) average (not boring, not nice)
- d) interesting
- e) very interesting

What was boring/nice?

11. What is your mark for the lesson series? Choose between 1 (lowest) and 10 (highest)?

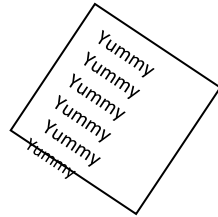
12. Please recommend what you think may improve this series for other classes. What should I definitely keep, and what should I change?

APPENDIX D. EXAMPLES FOR CATEGORIES OF Q9

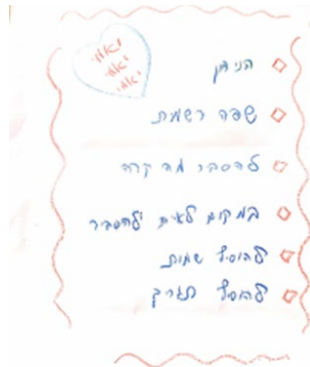
Categories	Example 1	Example 2	Example 3	Example 4
Declarative knowledge	In this lesson series I learned how to write a letter in the best way and what the criteria are for checking the letter	I was in the researcher group and I learned a lot from looking at the board group, and now I know much more	After I had observed I now know much more than what I knew before	I learned that it is important to add an opening to the letter
Procedural Knowledge	Because we had to correct things that before we did not know how to	I learned to flatter the company	The lessons gave me another opportunity to practice letter writing skills, and they also contributed to me seeing my mistakes and correcting them so I would also know what to do next time	You need to write politely and in high language
Interest	More interesting to learn that way	I learned in an interesting and different way	It is interesting to see according to what the students chose the winning letter	
Collaboration	I learned a lot from the group	Working together helped me	I never liked working in groups and after this activity I realized that it can be fun sometimes	

APPENDIX E. POSTERS

Translation

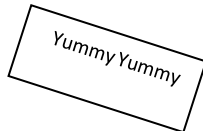


- The matter at hand
- Formal language
- To explain what happened
- To explain rather than to threaten
- To add names
- To add the date



Group 2

- To persuade
- To give examples
- To flatter
- Not to threaten
- To write politely

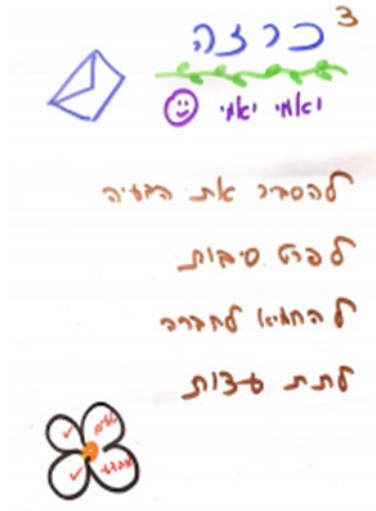


3

A poster

Yummy Yummy 😊

- To explain the problem
- To write detailed reasons
- To flatter the company
- To give suggestions
 - Tasty
 - Promotion



Group 4

- Don't be rude
- Write nice words
- Give reliable examples
- Don't write too long
- Write a heading – the matter at hand

