SaPeer Approach for Training Requirements Analysts: an Application Tailored to a Low-resource Context

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Abstract. [**Context and Motivation**] Role-playing is a typical pedagogical strategy frequently applied in requirements engineering education and training (REET). The technique was proven to be successful for teaching different requirements engineering (RE) activities, and the SaPeer role-playing approach was recently proposed to train students in requirements elicitation interviews. SaPeer was shown to be effective and useful in the context of a *high-resource* RE module involving seven tutors, and a three-weeks individual assignment. [**Question/Problem**] RE lectures are frequently conducted as part of software engineering courses, or in short RE modules, and there is often limited time to teach RE in general, and interviews in particular. Therefore, SaPeer needs to be adapted to these constrained contexts, and adequately assessed. [**Principal idea/Results**] In this paper, we present the application of SaPeer to a *low-resource* context. We tailor the approach to a one-week group assignment, involving one tutor only, and we apply it to a class of 24 students. By comparing our results with the original study, we find that students struggle in similar areas, and especially in question omission and planning. A qualitative analysis of the feedback of the students shows the appreciation for the interview experience, and offers specific recommendations for improving the educational material. [**Contribution**] We contribute to the literature in REET with the first tailored application of SaPeer. Our study extends the scope of SaPeer and offers the possibility of adopting it in other constrained contexts.

Keywords: Requirements Engineering · RE education and training · SaPeer Approach · Requirements Elicitation · Interviews.

1 Introduction

In requirements engineering education and training (REET), it is common to use the *role-playing* technique for teaching students how to conduct requirements engineering (RE) activities [24, 31, 25, 35, 28]. With role-playing, students are normally asked to play the role of the requirements analyst in a fictional project, so to have a hands-on experience of the difficulties of the profession, which requires

a complex combination of rigorous planning, flexible execution, technical competence, communication abilities, and soft-skills. Role-playing has been demonstrated to be successful for training students in different RE phases, such as elicitation [4, 12, 10], analysis [23, 1], and validation [21, 3]. In the last years, requirements elicitation interviews received particular attention, given their prominence in the RE practice [7, 8, 11, 14, 19, 9], and novel approaches for interview training were developed [12, 5]. In particular, the SaPeer approach was proposed for training students in interviews with role-playing, self-assessment, and peer-review [13, 12], and the authors shared the material to replicate and *adapt* the study [15]. Indeed, each educational context has its own peculiarities, characterized by the students' background, the educational goals prioritized by the teacher, and the availability of educational resources, such as number of tutors and amount of time. Therefore, staging an effective role-playing RE activity needs to account for the specific educational context. In particular, extensive training sessions in RE are often not possible, as RE modules are normally made of a limited amount of lectures, frequently included within larger software engineering courses [20, 16].

In this paper, we propose an adaptation of the SaPeer approach. SaPeer was originally experimented in a high-resource RE course, with seven tutors playing the role of customer, and a three-weeks individual assignment. Here, we apply SaPeer to a low-resource context, which required tailoring the approach to the needs of the course. An application with some changes to adapt to different conditions may be classified as an *external differentiated replication* [2]. It is *external* since it was performed by an independent researcher, i.e., the first author. Besides, the second author, who is one of the SaPeer proponents, was only contacted after the execution of the study. It can be called *differentiated replication* since changes were performed in relation to the original study: design, hypothesis, and context. To avoid confusion, we use the term *application* instead of differentiated replication to refer to this study.

The main changes with respect to the original study are: the students work in groups instead of performing individual activities; the assignment lasts one-week; only one tutor (the professor) plays role of customer. The study involves 24 Brazilian students from a RE class in a Postgraduate Course about Software Testing.

We analyze the outcome of the work from a quantitative and qualitative point of view, and we compare the results with the original study. Our results show that both groups of students struggle in the areas of question omission and planning and tend to forget to ask about additional stakeholders and feature prioritization. Furthermore, time management and listening skills are particularly poor. On the other hand, the simple suggestion of asking a summary at the end of the interview—given as advice already before the first interview—allows students to correct this typical mistake beforehand. Our main contributions are as follows: (1) we provide one of the few cases of external application in REET and RE in general; (2) we show how SaPeer can be successfully adapted to a low-resource

context, which is typical in REET [20, 16]; (3) we confirm most of the results of the original study in terms of easiness and usefulness of SaPeer.

The paper is organized as follows. Related works are discussed in Section II. A brief description of SaPeer, the rationale for tailoring it and how the tailoring was performed are described in Section III. The research design is presented in Section IV. The results are described in Section V and Section VI concludes the paper.

2 Related Work and Background

Requirements Engineering Education and Training (REET) is a lively area of research, with several relevant contributions addressing multiple phases of the RE process [4, 12, 10, 23, 1, 21, 3]. A systematic mapping study on the topic [26] identifies 79 high-quality research papers in the field already in 2015. The study highlights that requirements elicitation, which is the focus of our study, is addressed solely by 11% of the contributions and that the majority of the studies are either solution proposal or experience papers, including 34% of non-empirical studies. This suggests that the empirical maturity of the field is limited and calls for further contributions with a stronger experimental facet, especially considering *replications* or *tailored applications*, which are well-known pain points in RE research [6, 22]. We are aware of a few replications in REET, such as: the work of Walia and Carver [33], with four experiments on requirements inspection; the one by Hadar et al. [18], concerned with the evaluation of requirements model comprehensibility; and the one of Spoletini *et al.* [30], about two experiments on interview review. Finally, the recent work of Rueda *et al.* [29] compares different requirements elicitation methods in a family of experiments involving the same instructor.

Role-playing in REET. Many solution proposals in REET typically use *role-playing* as a pedagogical strategy for training students [27, 17]. The seminal contributions by Zowghi and Parjani [35] are one of the first works that propose to apply role-playing to REET, and discusses lessons learned, covering aspect related to student engagement and corrective feedback. Svensson and Regnell [31] make a step forward, empirically showing the effectiveness of the role-playing pedagogical strategy. Similarly, Nkamaura and Tachikawa [24] confirm that requirements modeling skills can be improved through role-playing, while Vilela and Lopes [32] show improvements in requirements elicitation and communication abilities. Finally, the results of Ouhbi [25] show the adequacy of role-playing as a tool for teaching RE even with limited time resources, as in our case.

Mistakes of Student Analysts. The investigation of common mistakes of students acting as analysts in role-playing interviews is presented in previous works by the authors of the SaPeer approach [10, 4, 5]. Specifically, Donati *et al.*[10] identify nine main communication mistakes of 36 student requirements analysts in a case study. Bano *et al.* [4, 5] present a list of 34 detailed mistakes that novices perform in requirements elicitation interviews classified into seven high-level categories (order of interview, planning, communication skills, etc.).

Based on that work, Ferrari *et al.* [12] introduce the SaPeer approach for training student analysts and correct typical mistakes. The work shows that the proposed method is effective in reducing students' mistakes and is considered useful.

Our paper replicates the study of Ferrari *et al.* [12], to investigate the applicability of the SaPeer approach in a low-resource context. With respect to other works in REET, we contribute with one *external* application in the field, led by an independent author that was not involved in the initial study, and with a focus on elicitation. As an application of an existing study, our work reinforces the empirical grounding of REET, extends the scope of applicability of SaPeer, and suggests useful improvements for the educational material provided.

3 Tailored SaPeer

In this section, we provide a brief description of SaPeer, the rationale for tailoring it and how the tailoring was performed.

3.1 The SaPeer Approach

The SaPeer pedagogical approach aims to foster *experiential learning* by letting students perform a role-playing interview with a fictional customer. Then, learning is further stimulated through reection, by asking students to find mistakes in their own interview and in the interview of their peers [12]. The acquired ability is then practiced in a second interview.

The main steps of the approach are: (1) **Preliminary Training:** the students watch a video on how to conduct interviews; (2) **1st Interview:** the students act as analysts and a tutor plays the role of customer; (3) **Mistake-based Training:** the students watch a second video in which the common mistakes presented by Bano et al. [4] are explained, and examples of erroneous behavior are given; (4) **Self-assessment:** the students listen to their interview, and answer a questionnaire with 32 statements concerning the occurrence of mistakes; (5) **Peer-review:** the students assess another student's interview; (6) **2nd Interview:** a second interview is carried out for further practice; (7) **Self-reflection:** the students answer a feedback questionnaire about the usefulness and easiness of the SaPeer approach. The videos, slides and questionnaires of the SaPeer approach can be found at [15].

3.2 Rationale for Tailoring the SaPeer Approach

The context in which SaPeer would be applied was an *online* RE class with 24 students in a graduate course about software testing. The classes had a duration of 15 hours (total) distributed in five days with three hours each.

Besides having a reduced time schedule, no additional tutor was available, and all classes and assignments would be taught and graded by only the professor. Hence, there was a need of performing the first adaptation, which was

conducting the interviews in *teams* considering that time was a major issue in this class. Accordingly, the students were divided into six groups of four members. The original study also foresees the possibility of conducting the interviews in groups if the scale is an issue in applying the approach. Furthermore, it was an opportunity for students to handle communication flaws between the project team and the customer, avoiding typical problems arising from the presence of one team member only interacting with the customer [11].

The reduced available time was also the reason for choosing reducing the time of interviews from 15 minutes as adopted in the original study to the 10 minutes adopted in this application.

The professor selected three projects, instead of the original two, to reduce the possibility of cheating. The projects are listed in Table 1. Similarly to Bano et al. [12], the task was collaborative. The students were expected to plan for the interview as a group and assigning among them the different tasks such as preparing questions, asking questions, taking notes, audio recording interviews, preparing minutes of meeting. It is important to highlight that self-assessment and peer-review questionnaires were filled only after the first interview. Since the class had a duration of one week only, it was not possible to quantitatively evaluate the actual improvement of the students. We mitigated this issue by evaluating their qualitative feedback.

Also, while in the original study the two interviews were about different products, in this study, the second interview was a clarification interview, and, therefore, the questionnaire may not be adequate to identify mistakes in this phase, as also noticed by Bano *et al.* [5].

Finally, another adaptation was the type of artifacts produced by the students. In our application, it was necessary that students train several artifacts. Hence, they produced other artifacts beyond user stories requested by the original study.

3.3 The Tailored SaPeer Approach

This work presents an external tailored application [2] of the study of Ferrari *et al.* [12]. The differences between the original study and this application are presented in Table 1.

We adapted the suggested timeline to apply the approach to the course duration (five days). The timeline was the following:

[Day 1]: A class about Introduction to RE. Students watched the "Preliminary Training" video on interviews. Students planned the interview and sent the script they intend to follow during the interview. Students executed the 1st interview. Students sent the meeting notes immediately after the completion.

[Day 2]: A class about Requirements Analysis and Specification. Students watched the "Mistake-based Training" video. Students answered the self-evaluation questionnaire. Students listened to other team interview (team with a different project than theirs) and answered the peer-review questionnaire.

Table 1. Comparison between the original study and this application.

Setting	**Original study [12]**	**This application**
Study goal	Evaluate the learning effect of the proposed approach and to acquire feedback on its usefulness and easiness.	Replicate the activities performed by the experimental group to acquire feedback on usefulness and easiness of the approach.
Research Method	Quasi-experiment with two treatments: SaPeer and practice-only.	Application without performing a controlled experiment.
Country	United States	Brazil
Type of class	Physical	Online RE class
# Participants	16 in experimental group and 22 in the control group	24
Students' profile	Graduate students where around 50% had previous experience in RE	Graduate students where only 8% had experience in RE
Time available to perform the activities	three weeks	one week
#interviews	2	2
Duration of interviews	15min	10min
Team involved in the role of customer for the role-playing activity	Seven tutors	One professor
Type of interview	Individual	Groups of four students
Language of the classes	English	Portuguese
Projects	Cool Ski Resorts: an information system to manage a chain of three Ski resorts [15], Nancy/Jims Salon: an information system to manage a hair dressing shop [15].	Cool Ski Resorts, Nancy/Jims Salon and Emergency medical response system: an application of smart items in the field of sensors network (designed by the instructor)
Artifacts produced by the students	User stories	Problem and business description, user stories, specification of requirements (functional with priority suggestion, non-functional and business rules), use case diagram, specification of 3 use cases, and one test case for a use case as long as it has at least one alternate flow.

[Day 3]: A class about requirements types: functional, non-functional, and business rules. Production and submission of the requirements in the form of user stories.

[Day 4]: A Class about validation and requirements management. Students executed the 2nd interview on the same project. Production and submission of a list containing Functional requirements with priority suggestion, Non-Functional Requirements, and Business Rules.

[Day 5]: Students sent the requirements document containing the artifacts listed in Table 1 and they filled out the feedback questionnaire. Students presented the results of the elicitation to the professor and the class.

4 Research Design

In this work, we applied SaPeer to a low-resource context, and compared the obtained results with the original study. In the following, we outline research questions, data collection and data analysis procedures.

4.1 Research Questions

The following research questions motivated the conduction of this work:

RQ1: What are the most frequent mistakes performed by the students? We analyze the most common errors performed by the students considering the mistakes categories provided by the SaPeer approach and we compare the results of this study with the results of the original study, considering the average between self- and peer-reviews scores obtained for the first interview. This allows understanding whether mistakes are similar for students with different backgrounds and culture.

RQ2: What is the degree of easiness and usefulness of the approach from the viewpoint of the students? We collect students feedback regarding their opinion about easy of use and their perception of the utility of the SaPeer approach and we compare the results of both studies obtained from the feedback questionnaire.

RQ3: What are the benefits and challenges of SaPeer *from the viewpoint of the students?* To answer this question, we present a thematic analysis of the feedback questionnaire to qualitatively understand to which extent the students considered the approach effective.

4.2 Data Collection and Analysis Procedures

To collect the data to answer our research questions, we asked the students to fill the following questionnaires:

- **self-assessment (RQ1):** this questionnaire contains 32 statements, one for each mistake type described in the mistake-based training. For each statement, the student was required to provide a degree of agreement in a 5-point Likert Scale: Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), Strongly Disagree (1).

- **peer-review (RQ1):** this questionnaire is similar to the self-assessment one, except for the formulation of the statements, which in this case are in third person.
- **feedback (RQ2, RQ3):** with this questionnaire, the students evaluate the usefulness and easiness of the approach, and provide comments on their experience. The students are asked to evaluate their usefulness on a 5-point Likert Scale: Extremely useful (5), Very useful (4), Moderately useful (3), Slightly useful (2), Not at all useful (1). Similarly for easiness: Very easy (5) to Very difcult (1). In addition, the students were required to comment on the effectiveness of their experience and recommend improvements.

To answer RQ1, we quantitatively analyze the answers to the self-assessment and peer-review questionnaires, and we compute their average for each mistake. This is compared with the average score obtained in the original study.

To answer RQ2, we analyze the answers to the feedback questionnaire about easiness/difficulty, and for each task, we compare the average scores with the original study. RQ3 was answered by performing a thematic analysis similar to the one presented in the paper of Ferrari *et al.* [13]. The themes were grouped into three categories: Challenges, Benefits, and Improvements.

4.3 Threats to Validity

As we performed an external application of the study of [4], we also inherit some of the threats to validity reported in their paper. Below, we analyze the threats to validity considering the classification of Wohlin *et al.* [34]. Considering *construct validity*, we mitigate threats related to the amount of mistakes by calculating the average between self-assessment and peer-review scores to reduce possible students' bias in assigning their scores. Since students performed group interviews, while they answered individual questionnaires, the actual self-assessment scores actually reflect a group score. By considering solely average values, we mitigate this issue.

To reduce threats to *internal validity*, a single tutor played the role of customer in all interviews. Hence, it was possible to provide similar answers to all groups. Besides ethical issues discussed below, a possible source of bias is the fact that the leader of the study, the course instructor, and the first author of the paper are the same person. However, we argue this threat is limited because SaPeer was proposed by other researchers, and so as all the material used in this study (training videos, slides, questionnaires, projects descriptions). Moreover, this bias is reduced since SaPeer and its artifacts were extensively validated by its proponents in previous works. To mitigate *ethical issues*, during the classes, it was reinforced that students were providing feedback regarding an approach available in the literature that was not developed by the professor. Besides, it is not possible to relate students' opinions and their names, all information was analyzed anonymously, and students were not graded based on the content of their feedback, their answers to the questionnaires and interviews, but only on the final documents produced.

Regarding *external validity*, we believe that our results are applicable in similar educational contexts. We compared our results with the original study, but we could not quantitatively compare effectiveness due to our different design. As mentioned, this is mitigated by qualitatively analyzing the students' feedback.

5 Results

RQ1: What are the most frequent mistakes performed by the students with respect to the original study?

We compare the results with the original study, considering the average between self- and peer- reviews for the first interview. This comparison is presented in Figure 1.

Fig. 1. Comparison between the results of the application and the original study.

We observe a similar behaviour between this work and the original one regarding the mistakes —the plot lines tend to overlap— although the students of this application committed slightly more errors. Common frequent mistakes in both groups are: not asking for additional stakeholders, not asking for prioritization, not asking about success criteria, limited rapport, and poor time

management. The categories that present more differences are communication skills, order of interview, and planning. In particular, our students performed worse in terms of listening skills and time management. This may be linked to the limited time they were given in the interview (10 vs 15 minutes), suggesting that the time constraint given is probably too limited. More time should be allocated to reduce the hurry that may lead to asking one question after the other without listening for the answer. On the other hand, our students remembered to perform a summary at the end of the interview. Different from the original study, the tutor provided this suggestion already before the first interview. This suggests that some mistakes can be actually corrected easily when the students know them, and this can be particularly useful to address the relevant mistakes in question omission mentioned above.

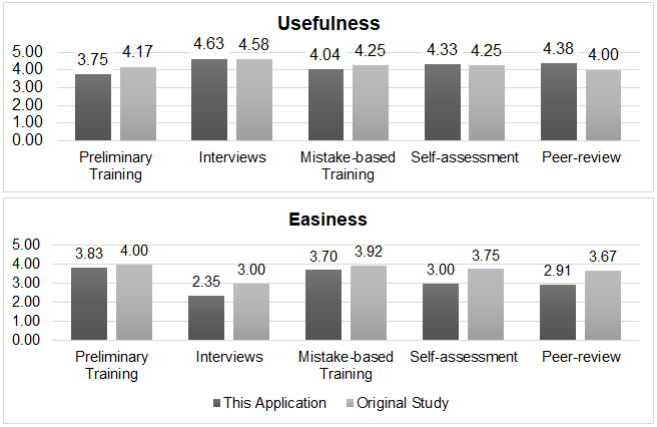

Fig. 2. Comparison between the students' feedback of application and original study.

RQ2: What is the degree of easiness and usefulness of the approach from the viewpoint of the students?

In Figure 2, we present the results about usefulness and easiness compared with the original study. Values are in general, very close, but some nuanced differences can be noticed. We observe that the students of this application considered the activities of interviews, self-assessment, and especially peer-review more useful than the students from the original study. We believe that these results may be related to the *novelty* of this experience by the students. The training, instead, were considered less useful, probably due to some concerns about the quality of the videos (see RQ3). Concerning easiness, we notice that the averages of the original study are higher than this application in terms of easiness. The limited time given for each task and the quality of the training may have played a role. As in the original study, the activity the students found most difficult was the interviews.

In the feedback questionnaire, some students highlighted the usefulness of the interviews:

All tasks were very useful, well thought out, and had clear and relevant objectives. But I especially liked the interviews: we were responsible for obtaining all the necessary information for the rest of the project in a few minutes of contact with the client, and for that, we had to use the techniques and tips shown in class to help us to plan.

All of them were very useful, but in my opinion, the task related to the interview was fundamental, as it was something I had no idea of the importance of this moment for the development of a quality project. In short: aligning our thoughts with the customer is essential.

RQ3: What are the benefits and challenges of SaPeer from the viewpoint of the students?

We organize our discussion by highlighting our observations from applying the approach considering the following categories: challenges, benefits, and improvements as presented in Figure 3.

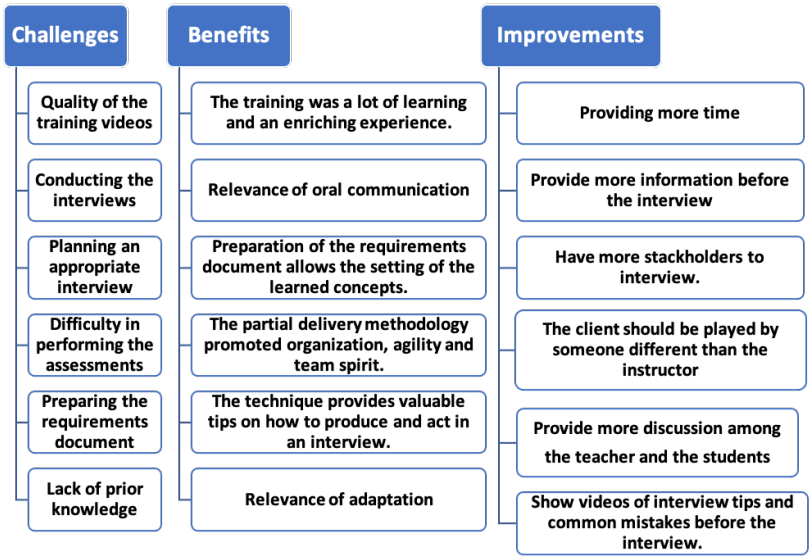

Fig. 3. Results of thematic analysis.

Challenges Many students reported challenges about the **Quality of the training videos**, and stated that the quality of audio of the videos provided by SaPeer approach should improve. Students performed comments about this: *The videos have a very bad audio*; *I felt a little difficult to understand some parts of the first video (interview tips) due to the audio quality and the absence of subtitles*; and *The accent of the person in the videos makes it difficult to understand.*

Some students also highlighted the difficulty in **Conducting the Interviews**: *"The interviews, especially the second, where you must control yourself so as not to repeat the mistakes made in the first. On how to express yourself and what questions to ask in that reduced time frame, in order to extract as much information from the stakeholder"*. Difficulties in **Planning an appropriate interview** observed in RQ1 are also confirmed by the students: **"An error was the lack of elaboration of a plan with other questions depending on the direction of the interview"**. Other themes are concerned with difficulties encountered in the other activities, namely assessment and requirements specification. Finally, the **Lack of prior knowledge**, both about the specific interview context and about the discipline and the software engineering process in general, was regarded as a relevant pain point: *"I believe it would be interesting to present some information about the profile of the person interviewed"*; *"The little knowledge about software engineering is one of the most difficult parts"*.

Benefits The students reported some benefits and contributions regarding the course in general, the training as well as about the application of SaPeer as presented in Figure 3. The students observed that the **Training provided a lot of learning and an enriching experience**. Some comments are: "*Training was carried out satisfactorily*", "*It improves the proximity between teacher and students*"; *"I really liked the video about common mistakes when doing interviews with stakeholders, I think that more than self-assessment, the video made me reflect what was missing, what I got right and what I need to learn for an elicitation interview"*; *"I see Interviews as the most useful task, as we experience in a practical way the difficulties that go from planning to understanding the points covered in the interview, in addition to leaving us much better prepared for any future interviews"*.

Another positive feedback was that **Adopting corrective feedback learning approach and asking students to deliver small artifacts contributes to better learning.** A Student pointed out the benefit of such choice: *"I would like to highlight that the partial delivery methodology of the requirements document promoted organization, agility and team spirit in the development of the requirements document"*. Benefits experienced are also concerned with the understanding of the **Relevance of oral communication**: *"Self-assessment of the interview made me face my own mistakes when making a presentation, highlighting the need to prepare myself better for other similar situations, especially considering the importance of good performance in moments of oral communication*". Also, **Relevance of adaptation** was recognized as something that was learned thanks to the followed approach, as the need for introducing and inventing questions that would go beyond the script was triggered by the improvised interviews: *"It would be interesting for the group to rethink itself during the interview, reserving a period of unplanned questions to avoid addressing questions already answered"*; *"I believe that trying to deal with the path that the interview took because in some moments it leaves the script that we planned"*.

Improvements The students also provided some suggestions to improve the course. The most reported improvement was that **More time is necessary.** In this work, the course was distributed in five days in an intensive week where each class had three hours of duration per day. Although SaPeer recommends that students should be given around 3 weeks to work on all the activities of the module [15], we did not have this time available for the training. This short time was pointed out by the students: *"In the end, the project's task was a little complex with respect to time. But I think we did a good job, even with a little pressure"*; *"Recommendation would be to give more time for delivery of the requirements document, I found the delivery time a little tight"*; *"The scarcity of time in planning and consequently the short time to execute something unplanned compromises a better performance"*. Other recommendations are concerned with the organization of the interview, as students missed the opportunity of interviewing more than one stakeholder: *"A suggestion would be to have one more stakeholder (if possible), so that students have access to another opinion about the problem"*.

Students also had some concerns about the tutor and noticed that **The person playing the role of customer needs to better prepare himself/herself to the interviews**: *"The customer should provide the same information for all groups in the same project"*. We actually observed that sometimes we forgot what was said to one group, and this was noticed by the students thanks to the peer-review questionnaire. This is not a major issue, as small imbalances in information should not affect the learning outcomes. However, it may decrease the trust of the students towards the preparation of the teacher. To mitigate this problem, the professor started to take notes of the answers provided. Maybe having other tutors might help. However, this should be done carefully in order to maintain consistency between information shared by all tutors.

Other students suggested that **The role of the client should be played by someone different than the instructor**: *"The students themselves could play the role of customer"*; *"The customer could be from the other group"*. We recommend that someone else plays this role, such as a tutor, since having the same person conducting the classes, playing the role of customer and assigning grades may confuse or inhibits some students because of the feeling of evaluation. This was not possible in our work because there were no tutors available for the classes, and the instructor had to perform all tasks himself/herself. The students suggested that other students may play the role of customer. Although this also the approach adopted by previous works [4][5], and we considered adopting this practice during the classes preparation, it requires a great effort of coordination planning, monitoring and training the students to behave as clients. Hence, it would be a huge effort to be done in a discipline that lasts only one week.

A final common recommendation is **Show videos of interview tips and common mistakes before the interview**: *"I think the first interview would be more complete if we knew what the best practices for interviews are and what mistakes we should avoid making"*. As we noticed, the recommendations concerning the need to perform a summary were actually provided beforehand, and

this error was generally avoided. Although in principle SaPeer suggests learning from committed mistakes, we argue that in case of limited time the training could be performed before the first interview.

6 Conclusions and Further Research

In this paper, we present an external application of the evaluation of the SaPeer approach [12]. We provide the following take-away messages: 1) students tend to commit the same mistakes, especially in the areas of question formulation, behaviour, and customer interaction; 2) students struggle more in the areas of question omission and planning; 3) significant differences are observed for the mistake "no summary" (at the end of the interview), quite common in the original study, and less common here, thanks to a simple recommendation provided at the beginning of the lectures; 4) the steps of SaPeer are confirmed to be useful; 5) interviews are confirmed to be among the most useful steps, but also the most difficult 6) time is a relevant issue, and a training that gives more time for interviews, while sacrificing aspects that are considered less useful (e.g., preliminary training or peer-review), can be an appropriate direction in contexts with limited resources. The contributions of this work are:

- We confirmed and provided evidence that the material of the approach is reusable, it is possible to adapt and replicate it.
- We provide an external application in a lower resources context (one professor to do all interviews and restrictions of time—one week only), supporting the empirical grounding of REET research.
- We had qualitative indications that, in this study, we obtained learning outcomes similar to the original. We observed that the ability of the students to conduct requirements elicitation interviews was improved, as well as their ability to analyze the execution and the content of requirements elicitation interviews. We conclude this by analyzing students' feedback (Sect. 5, RQ3), and taking into account their overall performance (meeting notes and requirements specification documents produced).
- We provide additional information through observations, lessons learned and suggestions for improvements, especially: improve video lectures, possibly adapting to the language of the students; have a tutor in the role of customer, instead of the instructor; have different stakeholders in different interviews.

As future works, we expect to join forces with the SaPeer team to carry our further applications of the approach, also including *role reversal* [13], and especially allowing more time for interviews. The SaPeer team involves tutors from the US and Australia, and the integration of a Brazilian viewpoint can allow the REET community to better understand the *cultural* differences that can emerge in applying the approach. These differences may not be clearly identifiable with an external application, such as the current one, in which culture is not considered a primary viewpoint for comparison.

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