

Students' Perception of the "Two-Stage" Collaborative Examination Based on the Focus Group Interview Method

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ABSTRACT

Background: Two-stage collaborative exams have been proven to improve students' performance and enhance students' learning efficiency. However, there is no quality study on students' perception of two-stage exams through Focus Group Discussion (FGD). Herein, the FGD method was implemented to explore students' perceptions of the two-stage exam. **Materials and Methods:** Third-year undergraduate pharmacy students participated in a two-stage exam with a natural product chemistry course. Students were required to complete the test individually and then answer the same questions again in small groups. Then, nine students comprising three high achievers, three middle achievers and three low achievers were recruited for the purposive sampling method of focus group discussion. Strengths, weaknesses and suggestions for implementing the two-stage exam were investigated. Data were transcribed and thematically analysed. **Results:** The interviewed students indicated that the two-stage exam gave them a chance to go over the answers of the exam while they still remembered the questions. They participated positively in the discussions and received immediate, specific feedback and then improved their mastery of knowledge. **Conclusion:** The two-stage exam as a remedy to the traditional exam was viewed favourably by students. The implementation of a two-stage examination can further enhance their learning experience and effectively improve learning efficiency.

Keywords: Collaborative Examination, Focus Group Interview, Immediate Feedback, Learning Efficiency.

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INTRODUCTION

The traditional method of examination is that students complete exams and get a grade at the end. Students soon forget the content of the exam and no longer pay attention to the knowledge that they do not understand. They do not even meet with the teacher after. Therefore, students have no opportunity to provide feedback and clarify wrong questions. This examination method only assesses performance, ignoring students' true understanding and mastery of knowledge. How can this assessment that only focuses on grades be improved? Collaborative group testing is a form of formative evaluation that has been highly recommended by educators.^{1,2} In addition, the two-stage exam is a relatively simple way to introduce collaborative learning and assessment into an exam, which provides students with immediate targeted feedback supplied by discussions with their peers.³⁻⁵

The two-stage exam innovates the exam format with the aim of mastering knowledge, in order to improve and supplement traditional exams.^{6,7} The exam is conducted in two stages. Stage 1 is an individual exam: The students first complete the exam individually for 80 min in the traditional style and then hand in their paper. Stage 2 is a collaborative exam: Students organize themselves into groups of 4-5 and complete the same exam again with their peers. The group shares a single copy of the exam sheet and discusses as they answer each question. The final exam mark received by each student is a combination of their individual and group exam scores. Considering students' mentality of caring about scores, the second stage of the exam is scored, giving students the opportunity to improve their grades, thereby promoting their learning initiative and cultivating teamwork spirit.⁸ In addition, to ensure the objectivity of exam scores, the portion of the individual exam score is 90-95% and the portion of the group exam score is 5-10%.

MATERIALS AND METHODS

Research design and research object

This study was approved by the Medical Ethics Committee of Jilin Medical University. This qualitative study aimed to explore



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students' perceptions of the implementation of the "two-stage" collaborative examination. The participants were third-year undergraduate students ($n=56$) majoring in pharmaceuticals from Jilin Medical University located in Jilin Avenue of Jilin city, Jilin province, China.

A Focus Group Discussion (FGD) was used as the data collection method.

Data collection was carried out from April 2022 to October 2022.

The Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist was used as a guide in reporting the methodology.⁹

Implementation of two-stage exams

The course of natural product chemistry is chosen for a two-stage exam. According to students' feedback, this course has a certain degree of difficulty, requiring students to have a solid foundation in chemistry and the ability to analyse and apply knowledge to solve problems. Adopting a two-stage exam is more conducive to students' brainstorming and learning from each other to better grasp the knowledge of the course. Based on the characteristics of the two-stage exam, the exam questions and types are designed, which mainly include multiple-choice, fill in the blank, comparison, distinction and analysis questions. There are no large essay questions and the need to write large paragraphs of text is avoided. The focus of the questions is prominent, with moderate difficulty and emphasis on students' comprehensive and accurate mastery of knowledge.

The exam includes two stages. The first stage is a traditional individual test session lasting 80 min. The second stage is for group cooperation in answering questions. After the individuals finish and submit their test, a group of 4 students are formed immediately. The combination method can be based on their student ID or voluntary combination by students, with duration of 5 min. The team studies and discuss together to complete the same exam questions again in 35 min. The final exam score includes two parts: individual and cooperative answer questions. Among them, the score for the first stage of individual answering accounts for 95% and the score for the second stage of cooperative answering accounts for 5%.

Design of FGD issues and training of the moderator

After the exam, the students were required to answer a questionnaire about whether they recognize the two-stage exam or not, with the following questions: Can this exam method improve exam scores? Has teamwork spirit improved? Is this method beneficial for better mastery of knowledge? Can the two-stage exam method stimulate enthusiasm for learning? What are the problems and how can they be improved? Students evaluate the two-stage exam to provide feedback on their overall satisfaction with the exam method and provide feedback and suggestions.

The responses to the questionnaire were used to develop FGD interview guidelines. Both the moderator and note-taker were previously trained to ensure that the moderators facilitated the group discussion and asked questions in a standardized manner. Meanwhile, the note-taker was responsible for noting important points throughout the FGD interview.¹⁰

Sampling and recruitment

The study sample consisted of 56 third-year undergraduate students majoring in pharmaceuticals. To ensure sample adequacy, the sample size is based on theoretical data saturation and purposeful sampling is conducted to ensure heterogeneity and data richness. A total of 9 students (including 5 boys and 4 girls) were selected based on the score range. The sampling number for the focus group was recommended because it is small enough for each student to share their opinions but large enough to collect a diverse range of opinions.¹¹ High- and low-scoring students may have different perspectives on exam methods, leading to differences in the effectiveness of research methods. Therefore, to reduce bias and obtain more balanced feedback covering a range of different scores, three high-scoring individuals (with scores ranging from 90 to 93), three medium-scoring individuals (with scores ranging from 78 to 82) and three low-scoring individuals (with scores ranging from 62 to 68) were selected. Students were informed that their participation was entirely voluntary and that their feedback would not affect their grades. All the selected students agreed to participate in the FGD and gave their consent.

Implementation of FGD interviews and data analysis

The FGD covered several different parts: moderator welcome speech, an introduction to the FGD, ground rules, a warm-up session, aim and objectives of the study, clarification of questions, key issues, concluding questions and conclusions and anonymity of responses. The FGD session lasted for approximately 60 min, assisted by a recorder and both audio and video conversations were recorded.

The moderator's question guidelines included four open-ended questions, as shown below. Each of the questions was discussed until data saturation and then proceeded to the next question.¹²

The main question guidelines were as follows

1. What is your opinion on the advantages of two-stage exams?
2. What is your opinion on the shortcomings of the two-stage exam?
3. Suggestions for the two-stage exam method?
4. Based on the questions we raised what else would you like to add?

The audio discussion was transcribed word by word and cross-checked with the notes taken by the recorder. Using NVivo™ Qualitative data management Software (QSR International

Pty Ltd., 11th edition), qualitative analysis of data records was independently conducted. First, relevant topics were generated for each question. Then, the information units were identified and classified into different generated topics. Finally, by hiring a third party to complete the triangulation of qualitative data analysis, the 3rd party also independently analysed data transcription, themes and information units to improve the rigor of the data and the effectiveness of the research results.¹³

RESULTS

Participant Information

9 participants were recruited and interviewed, including 5 males and 4 females of similar ages ranging from 22 to 23 years old.

Theme

6 main themes emerged when students explored the two-stage exam method.

1. Timely and accurate feedback is obtained through two-stage exams.
2. Two-stage exams are beneficial for improving learning outcomes.
3. The two-stage exam improves scores and stimulated learning enthusiasm.
4. The length of the second stage should be longer.
5. The two-stage exam promotes teamwork, communication and common progress.
6. For difficulties that are not resolved through cooperation when answering questions, students hope the teacher can explain and answer the questions.

The most discussed topic in the interview is that through the two-stage exam, timely and accurate feedback can be obtained

1. "I like this collaborative exam method. Although I have mastered most of the questions, there are still a few questions that I am unsure of the correct answers. Through the second stage of discussion, I was able to quickly understand the questions I did not master previously." (Interviewee 1).
2. "This exam format is very good, allowing me to receive timely feedback about the unknown knowledge and deepening my impression through discussion." (Interviewee 6).
3. "When I was still very familiar with the content of the exam and exactly knew the uncertain question, I immediately experienced the second stage of the exam and made up for my shortcomings through discussions with other classmates. It is a process of learning and deeply understanding knowledge points." (Interviewee 2).

4. "Through the second stage of exam, I can correct wrong questions in a timely manner and understand where the mistakes are, then get a deep impression. (Interviewee 5).

5. "This approach allows me to clarify my weak points in mastering course knowledge, make up for them in a timely manner and achieve better learning experience." (Interviewee 4).

Two-stage exams are beneficial for improving learning outcomes

1. "The traditional exam method only gave us a score and we did not have the opportunity to master the knowledge we did not know. The two-stage exam solved this problem and improved learning efficiency." (Interviewee 1).
2. "The content of the exam is usually the key knowledge of the course. Through the two-stage exam, students in the group can discuss problems in time, exchange information and gain correct understanding. It is very effective for the learning effect of the course and the mastery of knowledge." (Interviewee 3).
3. "Through collaborative exams, shortcomings in learning can be checked and through discussions with classmates, problems that cannot be solved have been solved, resulting in better learning outcomes." (Interviewee 9).
4. "This exam method focuses on mastering knowledge, not just obtaining a score, which is even more important to us." (Interviewee 4).

The two-stage exam improves exam scores and stimulated learning enthusiasm

1. "It is possible to promptly summarize the problems that exist in the first stage and make up the deficiency through the second stage exam. This not only helps to understand the problems that cannot be solved but also improves the score, which is conducive to stimulating learning enthusiasm." (Interviewee 3).
 2. "Increasing the score proportion of the second stage exam will be more conducive to students' participation and motivation." (Interviewee 8).
- "This learning-based exam is very innovative and helpful, which encourages us to contribute our wisdom to the group's performance. In addition, there is also an opportunity to improve exam scores. Therefore, everyone actively participates." (Interviewee 2).

The length of the second stage should be longer

1. "I hope to extend the exam time for the second stage so that we can extensively discuss more questions and deepen our impression." (Interviewee 7).
- "During the discussion, group peers can learn each other's strong points to make up self-deficiencies and

achieve the aim of improving learning efficiency. Therefore, we hope to extend the discussion time." (Interviewee 6).

"I hope to allocate some time from the first stage to the second stage for more thorough discussion. Furthermore, if allowed to read the book, it will be better to solve problems." (Interviewee 8).

The two-stage exam promotes team awareness of cooperation, communication and common progress

1."The second stage of answering questions reached consensus through group discussion, cultivating a sense of unity and cooperation, narrowing the distance between classmates and helping each student strengthen their understanding and memory of knowledge points." (Interviewee 1).

2."This exam method can strengthen communication among classmates, exchange knowledge, help each other, enhance team awareness and collaborative spirit. This is an additional gain for us." (Interviewee 5).

3."The cooperative examination method can promote our initiative and self-awareness in learning because everyone hopes to contribute to the team, rather than relying on others to improve their grades and everyone hopes to be recognized." (Interviewee 6).

For difficulties that are not resolved through cooperation when answering questions, students hope the teacher can provide the answer and explain the questions.

1."Through the first stage of the exam, we have been able to answer most of the questions correctly. Through the second stage of discussion, we have been able to learn some previously unknown questions, but there will still be a small part of the content that cannot be answered clearly even through collaboration. Therefore, I hope that the teacher can provide answers after the exam is over." (Interviewee 2).

2."During the second stage of the discussion, there may be disagreements on some difficult questions. We hope the teacher can provide the correct answers and explain the issues." (Interviewee 4).

Others: Some students have also raised questions about this exam method and provided suggestions

1."This exam method also has problems. Some students cannot answer most of the questions and rely entirely on others, resulting in an unobjective final score. Therefore, I think the score proportion of the second exam should be lower." (Interviewee 2).

2."When forming group, can we consider combining students with good and bad academic performance, which can more effectively help students with poor grades? (Interviewee 9).

3."There may be situations where students with good grades decide the answer and lack effective discussion." (Interviewee 5).

4."I hope to spread this exam format to other courses and implement a two-stage exam as a final exam. (Interviewee 7).

DISCUSSION

Students felt that the two-stage exam provided a good learning experience and elevated the meaning of the exam by conducting focus group interviews to assess students' perception of the two-stage exam. Students attached great importance to the real-time feedback of the group's collaborative answering questions and indicated that the 2nd-stage exam can help students understand the answers while they are still very concerned about them, which helps them master knowledge. All the interviewed students expressed their approval for this exam method and agreed that the results of the 2nd-stage of the exam should be included in the total score. However, there were different opinions on the proportion of total grade that the second-stage exam results should be responsible for; the proposed range was between 5% and 10%.

In addition, based on the suggestions put forward by students, the examination methods can be further improved as follows: Firstly, it is possible to consider extending the examination time for the second stage so that students have more time to discuss and learn and strengthen their knowledge mastery. Secondly, students could be allowed to consult textbooks to solve some unclear problems and deepen their impression. Thirdly a section of teacher feedback should be added, which means that the teacher provides guidance for answering questions that students still cannot solve after cooperation. Moreover, re-exam with the similar knowledge point should be conducted after one or two months to investigate students' learning outcome. In addition, for the grouping method, the student voluntary grouping method is currently used, it is necessary to consider rationality and try different grouping methods to discover the best method. Next, we will try to assign students with good and bad academic performance into 1 group, so as to provide an opportunity for the low scoring students to communicate with the students with good grades.

Through the implementation of two-stage exams and the application of FGD to understand students' recognition, the feasibility and scalability of two-stage exams are discussed as follows: 1. It is simple, feasible and easy to implement. No financial investment is needed and no special venue equipment is needed. 2. The workload of the teacher is not increased significantly. For example, implementing a two-stage assessment method for a class of 100 students only requires additional 20-25 test papers. In addition, the added invigilation time for the second stage of the exam is approximately 45 min (one teacher can supervise the exam). 3. The 2nd-stage exam results are included in the total score, but the proportion is only 5-10% (although it could be further reduced according to the situation), which has little impact on the total score and will not affect the objectivity of the total score.

This assessment method is not only conducive to improving students' grades, understanding and mastering knowledge but also cultivates team awareness, which will be welcomed by students and conducive to spread. 4. This exam pattern can be tried in some departments at first and after achieving positive results, it can be further promoted to the entire college.

CONCLUSION

The characteristic of the two-stage exam is the innovation of the purpose and concept of the exam and what changes is not the content of the exam but the form of the exam. The focus is not on the evaluation of grades but on enabling students to better grasp knowledge. Students in the FGD indicated that they could exchange information and gain correct understanding through the second stage of discussion in a timely manner. They believed this complementary effect between individuals and others is very effective, as it is a process of learning, communicating and deeply understanding knowledge points. In addition, the two-stage exam promotes communication and cooperation among students, cultivating a sense of teamwork for common progress. Students all hope to contribute to the team and improve their grades, which stimulate their initiative and enthusiasm for learning. Through focus group interviews, it was found that students approve and support two-stage exams and hope to spread them to more courses.

The two-stage exam is recommended for educational institutions because it is easy to implement and can achieve good results through small changes. It is a profound supplement and improvement to traditional exam methods. We hope it will receive widespread attention and be spread as a formative or even summative assessment after further improving various aspects of the exam.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ETHICAL APPROVALS

Ethics approval was obtained from the Ethics Committee of Jilin Medical University (SN:2023-LW012). All methods were performed in accordance with the relevant guidelines and

regulations. Students were informed that their participation was entirely voluntary and that their feedback would not affect their grades. All the selected students agreed to participate in the FGD and gave their consent.

ABBREVIATIONS

FGD: Focus group discussion.

SUMMARY

We first implemented FGD to explore students' perceptions of the two-stage exam. The interviewed students indicated that they participated positively in the discussions and received immediate, specific feedback and then improved their mastery of knowledge. In addition, the two-stage exam promotes communication and cooperation among students, cultivating a sense of teamwork for common progress. Therefore, two-stage exam as a remedy to the traditional exam was viewed favourably by students.

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