



**IMPROVEMENT OF RANKING RESULTS IN THE SCIENCE  
AND TECHNOLOGY COMPETITION FOR SECONDARY SCHOOL  
AND HIGH SCHOOL STUDENTS IN HO CHI MINH CITY  
(A CASE STUDY OF SOME RESEARCH TOPICS IN THE SOCIAL SCIENCES  
AND BEHAVIOR IN THE 2022 - 2023 SCHOOL YEAR)**

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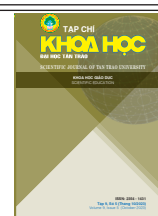
*research question*

*research plan.*

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**Abstract**

This study mainly uses theoretical research and mathematical statistics methods to identify the issues raised from the purpose, presentation structure, and evaluation criteria for research topics participating in the science and technology competition for secondary school and high school students, as well as surveying the current research results of 219 topics in the field of Social Sciences and Behavior in Ho Chi Minh City in the 2022-2023 school year. From this, the paper proposes measures related to the naming of the topic, determining the research question, and building a research plan to improve the participation results of the science and technology competition for secondary school students of topics in Social Sciences and Behavior.



**CẢI THIỆN VIỆC XẾP LOẠI CUỘC THI KHOA HỌC KỸ THUẬT  
DÀNH CHO HỌC SINH TRUNG HỌC Ở TP.HCM  
(TRƯỜNG HỢP CÁC ĐỀ TÀI LĨNH VỰC KHOA HỌC XÃ HỘI  
VÀ HÀNH VI TRONG NĂM HỌC 2022 - 2023)**

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**Từ khóa**

*khoa học xã hội và hành vi, nghiên cứu khoa học,*

*câu hỏi nghiên cứu,*

*kế hoạch nghiên cứu.*

**Tóm tắt**

Nghiên cứu này chủ yếu sử dụng phương pháp hồi cứu và phân tích hồ sơ, tư liệu và dữ liệu thống kê nhằm xác định những vấn đề đặt ra từ mục đích, cấu trúc trình bày và tiêu chí đánh giá đề tài nghiên cứu tham gia cuộc thi khoa học kỹ thuật dành cho học sinh trung học cũng như khảo sát thực trạng kết quả nghiên cứu của 219 đề tài thuộc lĩnh vực Khoa học Xã hội và Hành vi ở Tp.HCM trong năm học 2022 - 2023. Từ đó, bài viết đề xuất những biện pháp liên quan đến việc đặt tên đề tài, xác định câu hỏi nghiên cứu, xây dựng kế hoạch nghiên cứu nhằm cải thiện kết quả tham gia cuộc thi cuộc thi khoa học kỹ thuật dành cho học sinh trung học của các đề tài lĩnh vực Khoa học Xã hội và Hành vi.

**1. Introduction**

The science and technology competition for middle and high school students is held annually to innovate the form of organizing teaching activities and evaluating learning results in the direction of developing learners' qualities and abilities; promote teachers to improve their professional capacity and skills; improve the quality of teaching in middle and high school education establishments. Not only does the contest effectively exploit the potential of teachers, typically teachers with scientific research capacity and experience, but also it requires teachers to exchange and discuss current issues, events, problems arising from practice during

the learning process, experiential activities to orient and form ideas about learners' research topics. Among the 22 research fields, Social and Behavioral Sciences is an area that attracts great attention from middle school and high school teachers and students.

However, reality shows that when researching the field of behavioral science research, even in professional research, experience sometimes overwhelms theory. Setting requirements for scientific research in this field for middle and high school levels is quite a high and difficult requirement, not easy to implement. Besides, identifying new, highly applicable topic ideas - one of the important factors that determine

rankings in scientific research competitions - is very difficult for middle and high school students. However there are numerous of topics in this field participating in scientific and technical competitions, the results achieved are still limited. Therefore, raising the issue of improving the results of Social and Behavioral Science topics becomes extremely necessary.

## 2. Research methods

With the object of the research being the results of a science and technology competition for middle and high school students on topics in the field of Social and Behavioral Sciences, the research area is Ho Chi Minh City, we mainly used retrospective methods and analyze records, documents and statistical data. Accordingly, the retrospective method and analysis of records and documents are used to collect, analyze and briefly present information such as policies, requirements, and statistics related to the issue. Regarding survey and statistical results, statistical data analysis method is also used to produce specific and accurate data to serve the conclusions and recommendations of the article.

## 3. Results and discussion

### 3.1. Theoretical basis

#### 3.1.1 Overview of measures and principles for proposing measures

According to Phe, H. (2021), a solution is a way of doing something, a way to solve a specific problem (p.91), improvement is making a change, somewhat better (p.150). (1) Therefore, proposing improvement measures is understood as offering solutions to problems that still have many limitations to achieve better change. The goal of this research is to suggest ways to improve the chances of winning prizes for topics in the field of Social and Behavioral Sciences participating in Science and Technology competitions for secondary and high school students.

Proposing measures should ensure the following principles

- **Systematic and synchronous:** Systematic and synchronous: Based on the study of documents related to scientific research (Dieu, D.V., 2019) as well as presenting research results (Hoat, L.N., Mason, P., Wright, P., 2020; Hoat, L.N., 2020a, 2020b), proposed solutions need to be systematic, synchronous, closely linked, complementary, interactive, and supportive. One

measure supports another and vice versa. Besides, each measure has relative independence and its own unique characteristics. However, there is no universal solution or no solution for all. This measure is a condition and premise for the other measure; they cannot be separated from each other and together form a unified whole. This principle requires that the proposed measures must have an interactive relationship with each other and all aim to improve the results of the scientific research contest topic.

- **Inheritance and development:** Proposed measures must be based on inheritance and development of results achieved in practice, the inheritance and development of measures must also be demonstrated on the basis of existing research results.

- **Practical and feasible:** All activities related to middle and high school students need to pay attention to the psychological characteristics of their age. Therefore, when proposing and choosing measures, in addition to being based on the analyzed situation, we must also pay attention to the characteristics of cognitive activities, excitement... of high school students (Tu, N.T.et al., 2018, p.39-76) to focus on promoting children's strengths and in accordance with their ability to perform.

#### 3.1.2 The key issue in improving the results of participating in science and technology competitions for high school students

Seen from the purpose of the competition

Official dispatch 4565/SGDDT-GDTrH issued by the Department of Education and Training of Ho Chi Minh City clearly states the 6 purposes of the Science and Technology contest for middle and high school students. Among them, we are interested in purposes no 1, 5 and 6 (2022, p.1-2). From these purposes, we realize that the competition is organized to reinforce the Learner - Centered teaching concept that has been implemented in recent years. Like teaching, conducting research projects puts high school students at the center of this activity, seeing them as both the subject and the goal of that process so that each student's potential is optimally developed, effectively contributing to linking learning with practice. Therefore, right from the topic title to the specific presentation of the research process, clarifying the target audience, which is students, needs attention.

Seen from the request to present the topic

Also according to Official Dispatch 4565/SGDDT-GDTrH, a research topic participating in the Science and Technology competition for middle and high school students needs to meet presentation requirements (2022, p.6-7). Ignoring duplicate contents, we found out that there are the following problems for participants in the Science and Technology contest:

- Novelty is a prerequisite for scientific research in general and for determining research topics to participate in science and technology competitions in particular.

- It is necessary to present and clarify the close connection from research questions to scientific hypotheses, research methods and research results.

From there, it is necessary to once again affirm the important role of identifying the topic name in helping the evaluator clearly see the new contribution of the research. Furthermore, a research plan that clearly shows the connection between subjects (research questions, research methods and presentation of research results) is also needs to be done.

***Seen from the criteria for evaluating research topics***

Judges of the Science and Technology competition for high school students are provided with a criteria

table to evaluate research topics issued with Official Dispatch 4565/SGDDT-GDTrH, specifically including 3 levels of ranking and 4 corresponding evaluation criteria (2022, p.9). From this evaluation criteria table, we believe that to improve results, we need to aim at the goal of “promoting strengths to get maximum scores”. From this goal, the supporter can guide students to conduct research projects participating in science and technology competitions towards criteria that are easy to score, focusing on easy-to-implement content such as identifying research questions, plan the research and demonstrate how to properly collect and analyze data.

***3.2. Current status of research results of some topics in the field of Social and Behavioral Sciences in Ho Chi Minh city in the 2022 - 2023 school year***

***3.2.1 Description of the survey sample***

We have data on research topics from 6 judges who participated in the preliminary round of judging topics in the field of Social and Behavioral Sciences in the 2022 - 2023 school year. These judges either graded round 1 or graded round 2 together, so the topics of these 6 judges are all different. After eliminating research topics classified in the wrong field (according to the examiners’ notes and our re-survey), a total of 219 topics were used for our survey.

**Table 1. Summary data on topics in the field of Social and Behavioral Sciences in the 2022 - 2023 school year**

Survey problem		Quantity	Ratio %
<b>Education level</b>	Secondary school	92	42.00
	High school	127	58.00
<b>Contest unit</b>	Public school	202	92.24
	Non-public school	17	7.76
<b>Subjects</b>	Individual	40	18.26
	Collective	179	81.74
<b>Research products</b>	Number of products	48	21.92
	None of products	171	78.08
<b>Classification</b>	A	8	3.65
	B	198	90.41
	C	13	5.94

(N = 219)

Based on **Table 1**, we see the positive side that the Science and Technology competition for high school students has attracted many educational institutions to participate, both public and non-public. Furthermore, the number of projects carried out by the collective (179 topics, accounting for 81.74%) has partly brought an optimistic signal of forming and developing students' communication and cooperation capacity. Although we know that research topics in the field of Social and Behavioral Sciences are difficult to create scientific products for practical application, the number of 48 topics with research products (accounting for 21.92%) is a significant achievement. However, the fact that

very few research topics (8 topics, accounting for 3.65%) have the ability to make it to the final round - being graded A - is a reality that needs serious thinking.

### 3.2.2 Limitations in determining topic names

Surveying 219 research topics in the field of social and behavioral sciences in the 2022 - 2023 school year of Ho Chi Minh City, we found that naming the topic has many limitations, while the topic name is a very important factor that helps the examiners understand the overall content of the topic. The results of the survey of 219 topics help us generalize 7 limited issues related to determining topic names.

**Table 2. Statistics on some limitations in naming topics in the field of Social and Behavioral Sciences in the 2022 - 2023 school year**

Inappropriate name for scientific topic		Difficult to determine the subject of the research		The research problem is too familiar		Difficult to determine the theoretical basis		Difficult to determine the scope of research		Difficult to determine the contribution of research	
Quantity	Rate %	Quantity	Rate %	Quantity	Rate %	Quantity	Rate %	Quantity	Rate %	Quantity	Rate %
14	6.39	27	12.33	109	49.77	22	10.05	136	62.10	120	54.79

(N = 219)

Among the 7 limitations listed in Table 2, we are interested in topics that are difficult to identify research subjects (27 topics, accounting for 12.33%). Once the school has determined the competition to organize for students and encourage them to participate in scientific research, the supporting role of teachers must be properly understood and clarified, especially the limits affecting research. Of course, we do not have a basis to determine the level of teachers' participation in supporting the topics, but right from the naming - which is used to clarify how to pose the research problem - clearly defined the research subject is very important.

Accounting for nearly half of the surveyed topics (109 topics, accounting for 49.77%) are topics that have been "intensively cultivated" for many years. This sad situation contributes to confirming the reason why creativity is the biggest limitation of research topics in the field of Social and Behavioral Sciences in the 2022 - 2023 school year. However, through studying a number of documents in the field of Psychology and Behavioral Psychology suitable for secondary and high school age students that have been translated and published recently in Vietnam such as the treatise

by Fukahori, M. (2021), Shibuya, S. (2022), King, P. (2022), Lo, T. (2022), we also understand that setting criteria for research topics must be new in the research topics and problem solving ideas, or both, are not easy at all, especially for secondary and high school students participating in science and technology competitions.

Besides the limitations just analyzed, we found that 26 topics (accounting for 11.87%) have researched issues that are not suitable for students' psychology and physiology and can easily cause mixed public opinion when published. (such as conducting research on mindfulness practices in psychological healing, depression and anxiety of students, anti-family and social psychology of students, psychology of loss relatives after Covid-19, issues related to the LGBT community...).

### 3.2.3 Strengths of the topics

With the aim of improving the results of participating in scientific and technical competitions for research topics in the field of Social and Behavioral Sciences, we focus on surveying the component scores of highly rated projects (rated A).

**Bảng 3. Kết quả đánh giá các đề tài thuộc lĩnh vực khoa học xã hội và hành vi đạt điểm A năm học 2022 - 2023**

Topic code	Research evaluation criteria			
	Questions (10 points)	Plan and methods (15 points)	Implementation (20 points)	Creativity (20 points)
23-02-103	8	11	13	13
23-02-106	7	13	13	12
23-02-235	7	13	13	12
23-02-320	8	11	13	13
23-02-549	8	11	13	13
23-02-454	6	12	14	13
23-02-473	6	12	14	13
23-02-554	8	11	13	13

(N = 8)

Based on the survey results of 8 research topics ranked A, it is easy to see that the advantages of these topics are in identifying research questions, planning and choosing research methods. Of course, the limitations will depend on the content of research implementation and the creativity of the topic.

What surprised us the most was the total score of these 8 research topics: all topics were rated 45 points. Although this score may show a high degree of agreement in the opinions of the 6 judges, when compared with the topic evaluation rubric in Table 1,

it shows a very sad reality that all 8 graded A research topics both have scores below the rating level; meaning there is an almost negligible difference compared to the score at the upper limit (44 points) of the B rating level.

We also conducted an additional survey of 198 research topics rated B to determine the limitations that affected the results of these topics. Based on the evaluation scores of the 6 judges, we conducted statistics on the number of research topics with component scores under mean according to each evaluation criterion.

**Table 4. Data on research topics in the field of Social and Behavioral Sciences ranked B in the 2022 - 2023 school year with component scores below average according to each evaluation criterion**

Examiner	Research evaluation criteria			
	Questions	Plan and methods	Implementation	Creativity
1	1	0	29	32
2	0	21	19	26
3	0	1	10	15
4	4	0	18	29
5	0	4	2	8
6	0	0	14	28
Sum	5	26	92	118
Rate %	2.53	13.13	46.46	59.60

(N = 198)

Similar to research topics rated A, the limitations of research topics rated B are the research content and creativity. Inevitably, with a very small number of research topics, there are limitations in identifying research questions, planning and choosing research methods, these two contents are still the strengths of students who have done 198 research topics that ranked B.

#### 3.2.4. Evaluation

As mentioned, with the aim of improving results, the orientation is to “pick up the maximum score” to enter the final round, based on the real limitations of middle and high school students (in determining new research topics, innovation, building research outlines, choosing research methods, creating research products...), we believe that measures need to focus on promoting inherent strengths and improving the content are both easy to implement for students and easy to create sympathy for the examiner. Therefore, we aim to help students make a good impression right from naming the topic, determining the research question and implementing the research matrix to help the examiner see the research flow of the topic.

### **3.3 Proposing some measures to improve the results of participating in Science and Technology competitions for high school students on research topics in the field of Social Sciences and Behavioral**

#### 3.3.1 Pay attention to the naming of research topics

From a personal point of view, we believe that the name of a scientific research topic in general and a topic in the field of Social and Behavioral Sciences in particular, not only need to highlight the novelty of the problem and the idea of solutions, but also needs to meet the following rules:

- True (true nature of scientific research, clearly identify the object of implementation)
- See (through the topic title, readers can see the theoretical basis, limitations/scope of the research and research contributions)
- Avoid (find out issues that don't have much space left in research topics, or research issues that easily lead to bad public opinion). Satisfying these things, we believe that researchers have basically identified a good topic to proceed with.

#### 3.3.2 Create intermediate steps in determining research questions

In the topics surveyed, we found that there are still many cases where research questions and survey questions cannot be distinguished. Researchers need to understand that the nature of asking research questions is to clarify research tasks. Due to that, with a personal point of view, we believe that determining the research question needs to go through 3 steps: Determine the purpose of research - Identify research tasks (to realize research goals) - Devide research tasks into research questions.

For example, with the topic “Communication culture with peers of school students... - current situation and solutions”, the main purpose of the research is “Based on the rules/requirements of communication culture at school, the topic evaluates the current status of communication with peers of school students...; From there, propose specific solutions to raise awareness and adjust behavior in communication with each other of the above subjects.”

From that research purpose, the research tasks can be determined as follows:

- Determine the theoretical basis for the issue of communication culture in schools in general and communication culture between students in particular.
- Survey the current situation of communication with peers of school students... to build a practical basis for the topic..
- Propose specific solutions to raise awareness and adjust behavior for school students... when communicating with peers.

Based on the identified research tasks, the research questions will be:

- Based on what theoretical basis to research the issue of communication culture in schools in general and communication culture between students in particular?
- To strengthen the practical basis of the topic, how should the survey and analysis of the current situation of communication with peers of school students... be conducted?
- What measures are needed to raise awareness and correct inappropriate behavior for school students... when communicating with peers?

Among the three steps above, step 2 is the intermediate step because it is not shown directly in the presentation of the research topic. However, the important role of this step is undeniable.

### 3.3.3 Develop research plan into research implementation matrix

As analyzed above, building a research plan is a very important content to serve the purpose of improving results and orienting to “pick up maximum scores” to enter the final round. Furthermore, the close connection from research questions to research methods and research results is also an important content that the examiner wants to see in the topic. Therefore, from a personal point of view, we think that students should develop a research plan into a research implementation matrix, which contains important information, steps to conduct research, and the connection between research tasks - Using research methods - Reference documents for direct service - Products (if any) - Implementation time - Implementer. Actually, scientific researchers always have to build a research implementation matrix before embarking on specific tasks. Therefore, the measures we propose above not only aim to help improve results but also help students/researchers better control the implementation of the topic, develop logical thinking in scientific research in particular and serve in future study and work in general.

## 4. Conclusion

The above research has identified the main limitation that makes it difficult for topics in the field of Social and Behavioral Sciences to achieve high results in science and technology competitions for middle and high school students, which are the naming of the topic, the research content and the creative. Besides, the strengths of the topics are also recognized as identifying research questions, planning and choosing research methods. Comparing with the real limitations in scientific research in general and scientific research in the field of social sciences and behavior in particular of middle and high school students, we believe that naming the topic, identifying research questions and developing a research plan are the most important issues to serve the goal of “picking up maximum scores” from evaluation criteria.

With the naming of the topic, we propose the rule “True, See, Avoid”. With the identification of research

questions, from our own perspective, we believe that taking the intermediate step of identifying specific research tasks is very important. Finally, with the development of a research plan, converting this content into a research implementation matrix will support the research person/group in many aspects, not just framed in meeting the goal of “picking up the maximum score”. We have proposed specific and feasible measures to help students and supporters (middle and high school teachers) have direction to improve results when participating in science and technology competitions with topics in the field of Social and Behavioral Sciences.

Of course, measures to improve Science and Technology exam results are also related to a number of other tasks such as overcoming limitations in the products of topics in the field of Social and Behavioral Sciences or improving the effectiveness of coordination between middle and high school teachers with colleges and university lecturers in supporting students to carry out research projects, etc. Due to the limited scope of the article, the above things have not been mentioned but we will continue to make more researches later.

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