

# EFFECTIVENESS OF THE DELPHI TECHNIQUE AS AN EDUCATIONAL PLANNING TOOL

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## ABSTRACT

*This study aims to determine the effectiveness of the Delphi Technique as an educational planning tool. The authors investigated the perceptions of sixty-two pre-service school administrators who would most likely use the Delphi Technique for educational planning purposes. They were invited to participate in an actual Delphi Technique implementation process before they were asked to provide their responses to the research survey questions. Data collected in the study were carefully examined by coding category and identification of major themes to answer the research questions. The findings of the study have indicated the major strengths and weaknesses of the Delphi Technique. Most research participants agreed that Delphi Technique effectively sought consensus among diverse experts. The limitation of the technique was identified to be tedious and time-consuming. The research participants also recommended to improve Delphi Technique by allowing longer lapse of time between rounds of survey. However, they clarified that Delphi Technique did not fit all educational planning situations. The technique works best in planning situations of seeking for prioritization of possible options.*

## INTRODUCTION

Delphi Technique is a process in which a group of experts are invited to determine the future demands of business. It is designed as an approach to reach a consensus among experts about business plans or priorities. In the Delphi technique, a panel of experts are selected on the basis of their knowledge of the general business plans of the organization. As indicated by the Icfai Business School (2022), the main objective of the Delphi technique is to predict future developments in an identified area by incorporating the independent expert opinions. This process would avoid face-to-face criticism in group discussions among the experts.

This article started with a brief review of significant literature on the Delphi Technique, highlighting the areas of the orientation, application and evaluation of the technique. Based on the literature review, the major research question and sub-questions were developed for the study on the effectiveness of the Delphi Technique as an educational planning tool according to the perceptions of pre-service school administrators. Then, the methodology of the study was fully described followed by a report of the major findings as a result of the analysis of the responses from the pre-service school administrators. The findings of the study were discussed with reference to the reviewed literature. The implications of the findings for educational planning processes were also noted. This article concludes by recommending directions for future research on Delphi Technique as an educational planning tool.

## REVIEW OF LITERATURE

Literature written on Delphi Technique is enormous. It covers from introduction to origin, design, modification, utilization, advantages and disadvantages. Some of them take a theoretical approach to discuss the use of the technique while others include empirical studies to verify the outcomes of the technique. For this study, the literature review in this article is focused on the orientation, application and critique of the Delphi Technique as a planning tool.

### **The Orientation of the Delphi Technique**

The Delphi Technique is a planning approach widely used for gathering data from a group of experts with diverse opinions. It is a group communication process aiming to converge opinions on a specific issue. The Delphi process has been used in various planning fields, such as human needs, curriculum issues, resource allocation, etc. (Icfai Business School, 2022). As Hsu and Sandford (2007) described, “The Delphi technique is well suited as a method for consensus-building by using a series of questionnaires delivered using multiple iterations to collect data from a panel of selected subjects.” (p. 2) Twin (2022) also confirmed that Delphi Technique is a forecasting process and structured communication framework based on the results of multiple rounds of questionnaires sent to a panel of experts. He also added, “After each round of questionnaires, each expert is allowed to adjust their answers. This process combines the benefits of expert analysis with elements of the wisdom of crowds.”

### **The Application of the Delphi Technique**

Delphi Technique has been applied to planning and decision-making processes in many fields. Because of its special characteristics of seeking consensus, concealing privacy, and allowing position changes, Delphi Technique has been identified as a relatively objective and commonly acceptable tool to generate solutions to complicated issues. Some specific examples of its application are highlighted in the following:

Seemiller and Whitney (2020) used the Delphi Technique to categorize the level of complexity of sixty leadership competencies. Thirty-one leadership educators were invited to participate in the study by ranking in two rounds. The result of the study was the generation of a five-tier taxonomy based on the level of complexity of each of the sixty assessed competencies.

Sitlington and Coetzer (2015) analyzed the use of the Delphi Technique to support curriculum development in the renewal of school business courses. The authors clarified the Delphi Technique implementation process for obtaining curriculum opinion consensus in a diverse group of experts. The value of the Delphi Technique was demonstrated by providing an overview of the results of analysis.

Altinpulluk, Kesim, and Kurubacak (2020) conducted a study to determine the usability of augmented reality in open and distance learning environments following universal design principles. They made future forecasts of usability by gathering expert opinions on this subject using the Delphi technique. As a result, in analyzing the primary data collected, 92 themes were evaluated by experts and accepted as usability principles within the framework of universal design principles in open and distance learning.

Balasubramanian and Agarwal (2012) confirmed the use of the Delphi Technique in the planning aspect of the dental field. It is through a set of carefully designed sequential questionnaires that

judgments on a particular topic are derived from the opinions of field experts. They claimed that, on top of quantitative data analysis, professionals use their training and personal experience to assist decision-making by consensus of expert opinions through the use of the Delphi Technique.

### **Critique of the Delphi Technique**

In applying the Delphi Technique to different tasks in different fields, researchers observed the advantages and disadvantages of using the technique. While Delphi Technique works very effectively in one area, it may not perform as well as a forecasting tool in another. The following cases demonstrate the different perspectives of the Delphi Technique as analyzed by academic researchers.

Rowe and Wright (1999) systematically reviewed empirical studies looking at the effectiveness of the Delphi Technique and provided a critique of their research. Their findings suggested that Delphi groups outperformed statistical groups in their forecasting capabilities. However, they believed that the original concept of Delphi made generalizations about systematic phenomena difficult because the technique process lacked control of group differences and technique characteristics.

Sitlington and Coetzer (2015) analyzed the use of the Delphi Technique to support curriculum renewal. The research participants identified the strengths and limitations of the Delphi Technique process. Participants considered the process efficient and could draw out varied views on particular curriculum issues. The researchers identified the restrictive process of the technique as the limitation because the technique provided only a fragmented approach to curriculum design.

Nworie (2011) explained that Delphi Technique was initially used in the business settings but now has been widely used in other environments, including the educational arena. The benefits of using the Delphi Technique include obtaining expert opinions, building consensus, determining the suitability of the application of instructional interventions, forecasting trends, and interacting with research subjects with no time and space limitations.

Fink-Hafner, Dagen, Douřak, Novak, and Hafner-Fink (2019) investigated the strengths and weaknesses of using the Delphi Technique in social science research. They found that Delphi Technique avoids confrontations of the experts, reduces the opportunity for participants to conform with the dominant view, enables anonymity, minimizes manipulation or coercion, reduces the effect of noise, allows participants to correct any early misconceptions, and enables group communication free from geographical constraints. The weaknesses of the technique included a lack of guidance and agreed standards on interpretation and analysis, agreed on definitions of consensus, and selection criteria of participants. Delphi is also quite time-consuming and laborious for researchers and participants, and the result is limited in generalization due to the small sample size.

Donohoe, Stollefson, and Tennant (2012) explored the scope of identifying the Internet as a means for mitigating Delphi's limitations, maximizing its advantages, and expanding the breadth of its application. They claimed that e-Delphi has a range of effective and efficient benefits in assuaging traditional Delphi limitations. However, they clarified that a set of methodological issues about e-Delphi remain unaddressed.

## SIGNIFICANCE OF THE STUDY

The literature review has shown that Delphi Technique has been employed as a planning tool in many fields, including education. Researchers have narrated the effectiveness of the technique through a conceptual approach. Some scholars have even experimented with it with real cases to demonstrate its forecasting capabilities. However, this study takes up a unique approach by having the participating pre-service school administrators go through the real process of implementing the Delphi Technique first. Then, they were asked to share their experiences by identifying the strengths and weaknesses of the technique and suggesting ways to improve Delphi Technique as a planning tool. This study sets the precedent of such a unique research design to verify the effectiveness of the Delphi Technique. Additionally, the researchers intend to invite pre-service school administrators to participate in the study so that they can be well prepared to consider using the Delphi Technique when they start assuming their roles as school administrators.

## RESEARCH QUESTIONS

Major research question:

Is Delphi Technique an effective planning tool?

Research Sub-questions:

1. What are the pre-service school administrators' general perceptions of Delphi Technique as an educational planning tool?
2. What do the pre-service school administrators perceive as the strengths and weaknesses of the Delphi Technique as an educational planning tool?
3. How do the pre-service school administrators perceive the effectiveness of the procedure of implementing the Delphi Technique?

## METHODOLOGY

### Research Design

Fraenkel and Wallen (2009) described the qualitative research design as referring to studies that investigate the quality of relationships, activities, situations, or materials. They stated that qualitative researchers are especially interested in how things occur and particularly in the perspectives of the subjects of a study. This study aims to investigate how pre-service school administrators respond to their experiences in employing Delphi Technique to solicit average ratings of a previous task. The research setting of this study fits nicely into the characteristics of qualitative research design of "investigating the quality of relationships activities, situations, or materials."

### Research Participants

A total of sixty-two students from three graduate classes participated in this study. All the students were pre-service school administrators enrolled in the Master's level Educational Planning class in which implementing Delphi Technique was a class exercise. All the participants in this study have earned their Bachelor's degrees and are currently teaching at elementary, middle, or high schools. They are enrolled in the Master of Education (Administration) program of a university in southern United States, preparing themselves to be educational administrators. The demographic distributions of the research participants are displayed in Table 1.

Table 1. Demographics of Research Participants

Class	Enrolment	Race	Gender	School Level	Degree earned
1	24	14 White	15 Male	12 Elementary	20 Bachelor
		7 Black	9 Female	8 Middle	4 Master
		3 Others		4 High	
2	18	10 White	8 Male	12 Elementary	18 Bachelor
		6 Black	10 Female	4 Middle	0 Master
		2 Others		2 High	
3	20	8 White	13 Male	10 Elementary	18 Bachelor
		10 Black	7 Female	4 Middle	2 Master
		2 Others		6 High	

### Research Instrument

The research instrument is a researcher-constructed survey consisting of thirteen open-ended questions soliciting participants' qualitative answers. The survey is intended to ask the general perception of the participants relating to the use of the Delphi Technique as an educational planning tool. The participants were asked to identify the strengths and weaknesses of the Delphi Technique. They were also asked to evaluate the procedures of implementing the Delphi Technique to solicit a consensus of opinions. Additionally, they were invited to make recommendations for improvement to the use of the technique for educational planning. For the instrument's validity, six school principals, two from each school level, were invited to review the first draft of the instrument in terms of contents, language, and format for the application. The principals' recommendations for revision of the instrument were well taken, and needed revisions were made. The revised version of the instrument was used as the survey in this study. (Please see Appendix for a copy of the instrument.) For reliability of qualitative studies, "consistency over time with regard to what researchers are seeing or hearing is a strong indication of reliability." (Fraenkel & Wallen, 2009, p. 454) It was observed that in the three rounds of data collection, the participants' responses to the survey did not change significantly. Therefore, the reliability of the survey instrument is well confirmed.

### Research Procedure and Data Collection

This research was conducted in three graduate educational administration classes at a university in southern United States. Sixty-two pre-service school administrators (24 in Class 1, 18 in Class 2, and 20 in Class 3) participated in the survey. The same research procedure was used in these three classes for research preparation and data collection. First, the Goals of Education survey by Shilvock (2018) was used as a class exercise to solicit the participants' opinions about the goals of education. After two weeks, the same survey was again administered to each of the three classes with no prior notification. All the classes were asked to respond to the same survey the third time after another

two weeks. All the research participants were unaware that the same survey would be given to them three times, one after another. At the time of the second survey, a summary result of the first survey was presented to the participants for reference. At the time of the third survey, a summary result of the second survey was also presented to the participants for reference. This is the typical procedure of using the Delphi Technique to solicit the participants' average responses three times.

After responding to the same survey three times, all the pre-service school administrators in the three classes were asked to answer open-ended questions of a survey soliciting their opinions of their experiences in going through the different rounds of ratings as the Delphi Technique implementation process. The responses to their participation experiences in the Delphi Techniques implementation form the data collected for conducting this study.

### **Data Analysis**

As Creswell (2009) described, analyzing qualitative data involves making sense of text and image data. All the data collected in this study are the expressions of the participants who voice their opinions about the use of the Delphi Technique. They are qualitative data in the form of sentences or phrases. The collected data were classified by category and coded by nature of their respective references. Creswell (2009) identified four types of codes: codes expected, codes unanticipated, unusual codes and theoretical codes. All the codes and their related data, then, were closely observed for possible emerging themes or emphases that reflect the foci of the study. All the themes with their affiliated raw data were then analyzed and cited to provide answers to the research questions.

## **FINDINGS**

Data collected in this study were systematically analyzed, and significant findings were generated accordingly to provide answers to the research questions. In presenting the findings of this study, the researchers follow the sequence of the research questions developed. The following sub-sections are laid out in presenting the findings: Delphi Technique as a Planning Tool; Strengths and Weaknesses of Delphi Technique; and Effectiveness of Implementing Delphi Technique.

### **Delphi Technique as a Planning Tool**

This section reports on the results of data analysis in response to Research Sub-question 1: What are the pre-service school administrators' general perceptions of Delphi Technique as an educational planning tool?

The pre-service school administrators were asked about their general perceptions of the Delphi Technique as an educational planning tool. Their responses were tabulated as frequency checks as shown in Table 2.

Table 2. Research Participants' General Perceptions of the Delphi Technique

Themes identified	Number of Checks out of 62 participants
• See yourself change position over time.	48
• Lose interest after three rounds of survey.	35
• Time consuming process.	28
• Restrictive in expressing opinions.	30

Many of them perceived the technique to be effective in pursuing educational planning processes. They found it particularly interesting to see how their positions on educational issues change over time. Some of their suggestive comments are:

“I enjoyed doing the Delphi Technique and could see myself doing it again.”

“I think it is a good idea. It makes one think about various aspects of an issue.”

“I like it because it’s interesting to see where and how your view of important issues change.”

Approximately one-third of the pre-service school administrators considered Delphi Technique to be too tedious and time-consuming. They thought that people’s viewpoints should not significantly change after a short lapse of time, and the waiting time spent on this process was not worth the effort. One participant said,

“It is not a very effective tool because after doing it several times, people lose interest.”

Another participant also stated,

“It takes a long time to think through the questions to complete one round. Afterall, in all three rounds, the answers repeat and do not vary much.”

Some participants thought the Delphi Technique device was too restrictive of people’s thinking and should not be used as an educational planning tool. They felt that participants should be allowed to express their ideas to enrich their responses openly. Some others also considered the technique suitable for use only in particular circumstances.

**Strengths and Weaknesses of the Delphi Technique**

This section reports on the results of data analysis in response to Research Sub-question 2: What do the pre-service school administrators perceive as the strengths and weaknesses of the Delphi Technique as an educational planning tool?

The following table shows the frequencies of theme appearance with reference to the strengths of the Delphi Technique:

Table 3. The Strengths of the Delphi Technique

Themes identified	Number of Checks out of 62 participants
• See everybody’s viewpoints and change.	40
• Have the opportunity to refocus/rethink.	35
• See what is consistently deemed important.	42
• The entire process is anonymous.	29

Most of the pre-service school administrators considered the strengths of the Delphi Technique to be the device of allowing respondents to try their answers two to three times. They were able to see the group responses of the previous times and make adjustments to their positions. They appreciated the technique’s setup to respect respondents’ privacy and felt free to express themselves openly. Some of their typical responses are shown below:

“By answering the question or listening twice you get a good idea of people’s opinion.”

“Great overview feeling of a group. Great to see results of thinking if there was a shift in beliefs.”

“It shows a variety of points of views and shows how people’s view change.”

“You have the opportunity to refocus/rethink about the questions/topics.”

“You are able to see how opinions change; you are able to see what is consistently deemed important.”

“Everyone’s opinion is given and then everyone has a say. Nobody’s feelings get hurt because it is anonymous.”

The pre-service school administrators also commented on the weaknesses of the Delphi Technique, with most of them focusing on the number of rounds in administering the survey instruments. While the repeated application of the same survey could be a strength in certain circumstances, they thought it could also become a serious weakness of the technique. Let us hear what they said,

“People may not read the questions as carefully the 2<sup>nd</sup> and 3<sup>rd</sup> time – may not take it as seriously.”

“It is redundant and time consuming.”

“People may get tired and simply guess the answers in the 2<sup>nd</sup> and 3<sup>rd</sup> time.”

“It can possibly aggravate or annoy the person that must continue taking the survey several times.”

Additionally, many pre-service school administrators also thought that the Delphi Technique process takes too long from start to finish. Decision-makers must wait several weeks from the first round of the survey to the last round to come to a recommended solution to a problem. Time is of the essence. They complained,

“It takes a long time to make a decision. People may grow weary of the procedure.”

“The process takes a while to collect data to come to a conclusion.”

Table 4 below shows the frequencies of theme appearance with reference to the weaknesses of the Delphi Technique:

Table 4. The Weaknesses of the Delphi Technique

Themes identified	Number of Checks out of 62 participants
<ul style="list-style-type: none"> <li>It is redundant and time consuming.</li> </ul>	50
<ul style="list-style-type: none"> <li>People get tired and simply guess the answers.</li> </ul>	42
<ul style="list-style-type: none"> <li>It takes a long time to make a decision.</li> </ul>	48

### Effectiveness of Implementing the Delphi Technique

This section reports on the results of data analysis in response to Research Sub-question 3:

How do the pre-service school administrators perceive the effectiveness of the procedure of implementing the Delphi Technique?

When the pre-service school administrators were asked if they knew why they were requested to respond to the same survey three times, most thought the purpose of repeatedly taking the survey was to check for consistency of responses. They stated,

“Check to see if the ranking would change.”

“The purpose is to compare each set of results and come to a consensus.”

“It is intended to allow participants time to give further thought to their previous viewpoints.”

Some of the pre-service school administrators also thought that the multiple times of using the same survey was to provide sufficient research data to compare and test the reliability and validity of the survey instrument. It is assumed that people’s positions should not change significantly in a short time. If the instrument is good, it should yield consistent outcomes over a reasonable length of time.

The frequencies of the participants’ responses to the reasons of repeated surveys in the Delphi Technique are displayed in Table 5 in the following:

Table 5. The Frequencies of Participants’ Responses to Reasons of Repeated Surveys

Themes identified	Number of Checks out of 62 participants
<ul style="list-style-type: none"> <li>See if the ranking would change.</li> </ul>	45
<ul style="list-style-type: none"> <li>Compare each set of results to reach consensus.</li> </ul>	55
<ul style="list-style-type: none"> <li>Test the reliability of the survey instrument.</li> </ul>	24

When the research participants were asked if they could remember their responses to the same questions in the same previous surveys, over half of them indicated that they either could not remember or could only slightly remember their previous responses.

The pre-service school administrators were asked how serious they were in doing the same ratings the second and the third time versus the first time rating in the survey. Approximately two-thirds of them openly admitted that they were not as serious when completing the second and third-time ratings as they were doing the first-time rating. An overwhelming majority of them indicated that they made slight changes in their viewpoints in the second and third times of the survey. However, they claimed that their viewpoints in the first round survey were more representative of their own.

Table 6 below shows the frequencies of the participants' responses to their seriousness in answering the same questions repeatedly at different times:

Table 6. Frequencies of Participants' Indication of their Seriousness of Repeated Surveys

Themes identified	Number of Checks out of 62 participants
• Remember answers to previous rounds of survey.	22
• Seriousness in the second and third rounds of survey.	25
• Answers to the first round of survey are more representative.	50

As to the improvement of the Delphi Technique, most of the pre-service school administrators recommended a longer lapse of time between rounds of the survey. They thought that allowing longer waiting time between any two survey rounds would give the participants a more stable opportunity to re-evaluate their positions on particular planning issues. They agreed that employing a repeat pattern of two to three rounds was common and appropriate in a typical Delphi process.

Finally, the pre-service school administrators were asked if they would recommend using Delphi Technique as a tool for educational planning. Their opinions were split into three groups. The first group of participants considered the technique effective, particularly in seeking consensus among the staff of divided viewpoints. The second group rejected the technique simply because it was time-consuming and would not fit in many educational planning situations. The third group claimed that the determination to use Delphi Technique depended on the demands and outcomes of different planning tasks. Some planning issues, such as group consensus and prioritization of options, can accommodate Delphi Technique better than others. They made it clear that:

“Not for high important items that are time sensitive.”

“I suppose it works if we are trying to prioritize items that have been agreed upon.”

“For priority planning/goal setting tasks – beneficial. For measurement tasks – no.”

## DISCUSSION

Most of the pre-service school administrators in this study agreed that Delphi Technique was too time-consuming in its application. This statement agrees with what Fink-Hafner, Dagen, Dou˘sak, Novak, and Hafner-Fink (2019) claimed that Delphi Technique was not suitable for planning projects of constrained timing.

Fink-Hafner and his colleagues also found in their study that the identities of all the participating experts in Delphi Technique implementation were not disclosed. This practice could avoid any

confrontations among the experts in the field. The findings in this study also indicated that anonymity was a strength of the technique. The participants felt free to express their opinions with no tracking record of who they were.

Sitlington and Coetzer (2015) thought that the design of the Delphi Technique did not offer many other open options for the participants to select. The participants in this study also agreed that the technique was developed with too much restriction. Respondents should be allowed to open themselves to offer out-of-the-box opinions.

A significant finding of this study is also in agreement with Nworie (2011) that, in the implementation of the Delphi Technique, there is no time and space limitation. Participants' geographical locations and time availability do not become barriers for participation in Delphi surveys.

The pre-service school administrators in this study could see the group responses of the previous times and adjust their positions. Fink-Hafner, Dagen, Douřak, Novak, and Hafner-Fink (2019) also complimented on Delphi Technique designed with the opportunity to allow the participants to make corrections to their previous responses.

While some of the findings of this study agree with previous research, some are unique of its own. First, the participants in this study honestly admitted that they did not respond as seriously to the survey questions in the second and third rounds as they did in the first round. They even claimed that their opinions in the first round were more representative of their own. Second, they recommended a longer lapse of time between any two rounds of the survey to improve the design of the Delphi Technique. These research findings were not reported in previous studies.

Additionally, an examination of the findings of this study has disclosed some conflicting opinions among the research participants. While some of them thought Delphi Technique was too time-consuming to be efficient, some indicated that the strength of the technique was actually in the time taken to allow the participants to reconsider their previous responses more carefully. In applying the Delphi Technique to a particular planning project, consideration has to be given to the nature of the project and how it could match the special properties of the technique.

## **IMPLICATIONS TO EDUCATIONAL PLANNING**

As indicated by some of the pre-service school administrators in this study, Delphi Technique can be used effectively in specific educational planning tasks such as goal setting and priority decisions. Because of the drawbacks of the technique, it may not be suitable for use in some time-sensitive issues and case studies. As Weatherman and Swenson (1974) suggested, Delphi Technique has had some basic applications in educational planning, including forecasting probes, strategy probes, preference probes, and perceptions of a current situation. In deciding to use Delphi Technique, Weatherman and Swenson recommended that educational planners seriously consider modifying the technique in terms of the participant constituencies, the procedural variables, and the outcome qualities.

The findings of this study have indicated that Delphi Technique is unsuitable for all educational planning occasions. While we could make the best use of the technique's advantages for the benefit of planning, other planning strategies could be employed to complement the weaknesses of the technique. To make the instrument less restrictive, open-ended questions can be added to

quantitative surveys. Face-to-face interviews of representative participants could also supplement the Delphi Technique's multiple rounds to confirm the outcomes of the technique.

The findings of this study also indicated that research participants did not like to have their identities disclosed. This finding is valid in all kinds of educational planning processes. Therefore, seeking consensus in Delphi Technique helps protect the participants' identities and is a preferred approach to secure solutions to educational problems rather than going by majority votes.

### **LIMITATIONS OF THE STUDY**

Even though the meaning of qualitative research is not intended for generalization purposes, the extent of the findings of this study is limited to its representation. The perceptions of the pre-service school administrators in this study are limited to only one graduate program of one university. It is not easy to convince others to believe that similar studies elsewhere could generate similar results. Additionally, the findings of this study are solely based on the responses of the pre-service school administrators to the open-ended questions of the survey. No other data from personal interviews or documentary records were used for cross-checking to verify the findings of the survey results. Furthermore, the findings of this study were created under the research setting of a total of three rounds of survey and a two-week lapse of time between any two rounds. A variation of this research setting could come up with different results.

### **CONCLUSION**

This article is the report of a study conducted to investigate the effectiveness of the Delphi Technique as an educational planning tool. The investigation is based on the perceptions of a group of pre-service school administrators in a university's graduate program in southern United States. The design of this study is unique. Since educational administrators most likely use Delphi Technique in educational planning for all kinds of planning tasks, this study has involved the pre-service school administrators in all the implementation activities of the Delphi Technique. The purpose is to prepare them early enough to consider using the technique in the real world and identify its strengths and weaknesses. When they participated in the Delphi Technique implementation before the research survey, they would experience the efficiency and effectiveness of the technique personally. After the participants' personal experiences, their responses to the research survey would be more realistic.

The major research question, "Is Delphi Technique an effective planning tool?" was first established. Then, the research sub-questions were developed around the central theme of the major research question. Therefore, the answer to the major research question is sought from answers to all the research sub-questions. The findings of this study indicated that Delphi Technique was an effective planning tool, particularly in seeking group consensus. However, the findings also showed that the technique was too tedious and time-consuming for use in educational situations with a set time constraint. Future studies about the critique of the Delphi Technique are recommended to involve teachers, current school administrators, and professional experts. To investigate their perception differences, comparative studies can be conducted between school administrators and teachers. Expert opinions could bring unique perspectives to improving Delphi Technique as a planning tool.

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**APPENDIX**  
**Evaluation of the Delphi Technique**

In the following survey, please respond honestly to each of the open-ended questions about the use of the Delphi Technique as an educational planning tool. Your responses will help educational planners improve the implementation of the Delphi Technique.

1. What is your opinion of the Delphi Technique as a planning tool?

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2. What is/are the strengths of the Delphi Technique?

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3. What is/are the weaknesses of the Delphi Technique?

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4. Do you remember the first rating when you were asked to do the same rating the second time?

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5. Do you remember the first and the second ratings when you were asked to do the same rating the third time?

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6. Did you do the second and third ratings as seriously as the first-time ones?

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7. Of the three ratings, which one do you think is more representative of your own opinion?

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8. Do you know why you were asked to do the same rating three times?

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9. Do you believe that allowing a longer lapse of time between two ratings could affect the result of the ratings?

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10. Would you recommend the use of the Delphi Technique in educational planning tasks?

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11. How many times of rating would you recommend using Delphi Technique for the best planning purposes?

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12. Other comments:

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**End of Survey**