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The Study on the Strategies of Choosing Music Schools from the Viewpoint of Kansei Engineering

Tian-Wei Sheu[1], Ching-Tzu Chen[1], Jia-Tzer Hsu[2,*], Nagai Masatake[1]

[1] Graduate Institute of Educational Measurement and Statistics, National Taichung University of Education, Taichung, Taiwan.

[2] Department of Computer Science and Information Engineering, Hungkuang University, Taiwan.

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Abstract

This research is to apply the kansei engineering to the study of choosing music schools. The purpose is to help parents select the perceptual characteristics and priorities of environment elements which are suitable for children to learn music. In this study, the combinations of Nagai method (5W1H), AHP (Analytical Hierarchy Process), ISM (Interpretive Structural Modeling) and GRA (Grey Relational Analysis) are used to clarify the development characteristics of music schools, and establish feasible options and assessment models. It is hoped to provide good references for the parents who wish to let their children engaged in music education.

Keywords: kansei engineering, music school, nagai method, AHP, ISM, GRA

1. Introduction

Music education has always been regarded as the basis of the character education. The considerations of choosing music schools are issues of concern to students and parents, because music schools focus on the cultivation of musical talents and the enhancement of music literacy, and offer age-appropriate and talent-appropriate teachings to those students having interests or development potentials in the stages of elementary, junior, and high school in order to lay a good foundation for domestic music gifted talents and facilitate a broader space for development. The establishment of the music classes is able to not only maintain the requirements of general school music education, but also provide the high-quality learning environment of music classes for children to achieve the age-appropriate and talent-appropriate development potentials and develop the ability to enjoy music. The main purposes of this research are how to improve the quality and value of high-quality music schools and how to find the most appropriate selection which best meets the children's interests and development potentials from those music schools.

2. Research Methods

Music education will often take two different stances, one focuses on nurturing play-designed performers or creation-designed creators; the other is to advocate children's preferences and develop their music literacy mainly along their interests. In this study, the combination of AHP and ISM is used to investigate the characteristic elements of the music schools, provide the selection strategy references for parents, and finally work out the possible options.

2.1. First stage: collection for the basic elements of vocabularies of the music schools

We first conduct the search and collection of music-school-related vocabularies and kansei-engineering-related literatures, then conduct initial screening for such vocabularies using the KJ method and the 5W1H method.

2.2. Second stage: extraction and convergence for the basic elements of vocabularies of the music schools

After comparing the basic elements of vocabularies of the high-quality music schools with those of the general music schools, we then extract the more important kansei elements of vocabularies.

2.3. Third stage: establishment of the correspondent relations among the basic elements of vocabularies of the music schools

We obtain the main selection criteria using the cluster analysis approach. When a number of criteria are produced, we use the AHP method to conduct the assessment of the importance of the criteria, and then find the sorting of the design criteria [8].

2.4. Fourth stage: establishment of the strategies for selection of the music schools

Through the calculation of the ISM software, we can get the hierarchical diagram of the ISM structure model [9]. As shown in Figure 1, the vocabularies located at the top are the highest goals for development of the music schools, while those located at the bottom are the basic elements of vocabularies for development of the music schools.

3. Results

According to the cluster states of the basic elements of vocabularies of the music schools and the relations among those vocabularies, the hierarchical diagram in Fig. 1 can be divided into four hierarchies. They are described as follows:

3.1. Hierarchy 1: resource properties of the music schools

This hierarchy is to mainly assess the affected software and hardware structure of the music schools because of the high-quality environmental learning space, resources available and other conditions, i.e., the basic level that is affected by the factor of resource properties.

*Corresponding author, Email: jth@sunrise.hk.edu.tw

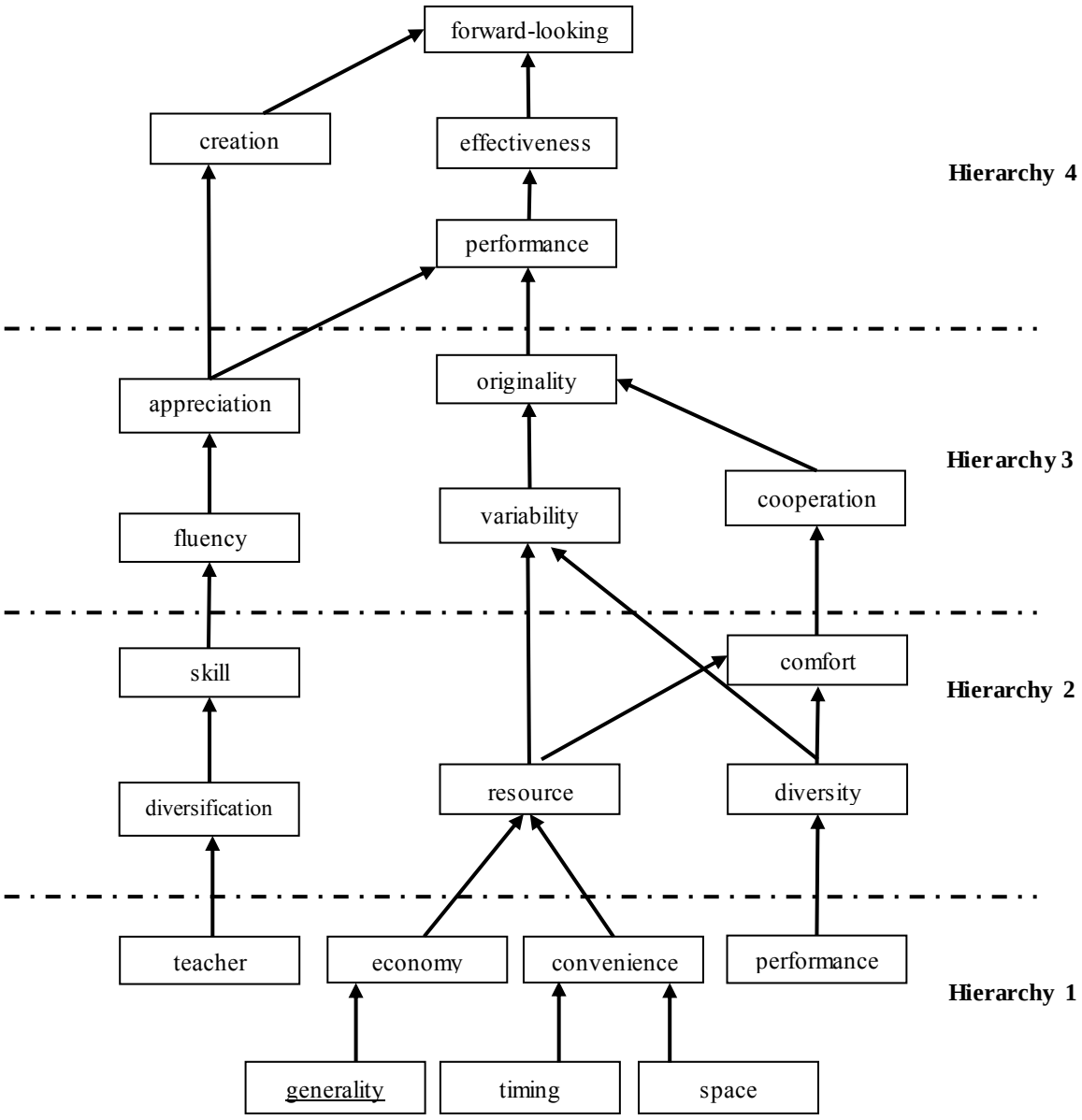

Fig. 1 The hierarchical diagram of the ISM structure model

3.2. Hierarchy 2: skill of the music education

This hierarchy is to mainly illustrate that the basic skills of the music education will affect the performance of external competitions.

3.3. Hierarchy 3: appreciation ability of the music education

Because of the learning of skills of the music education, the music education is no longer limited to the skill practice, while the music appreciation is integrated into the music curriculum design which emphasizes on listening to music, appreciating the importance of music, and encouraging students to have more exposure to music and participate in music show. Those are to prompt the students to have the music appreciation capabilities, and then have a more beautiful lifestyle and music literacy.

3.4. Hierarchy 4: creation of the music education

The integration of this hierarchy will be able to highlight the significance and value of the music school history, and emphasize on the effectiveness of the music cultivation education and the forward-looking of the school overall development.

According to the bottom-up structure shown in Fig. 1, this paper prepares three design paths which are feasible options to choose music schools. As shown in Fig. 2, the three paths are encoded from left to right as path 1, path 2, and path 3. In order to explore the best selection strategy (path) to choose music schools, we first conduct structure analysis for the lexical content of these three paths, and then understand the existing structural meaning of each chosen path. The analytic explanations for the three paths are described as follows:

3.5. Case I: on the left path of Fig. 2 (path 1)

This option is defined as “the structure type of cultivation of music performers or musical creative talents.” It is a long way to cultivate the music experts and creative talents. In addition to students with the advantages of congenital development potential, it also needs good teachers to guide the practice of music skills, as well as to guide students' musical performance

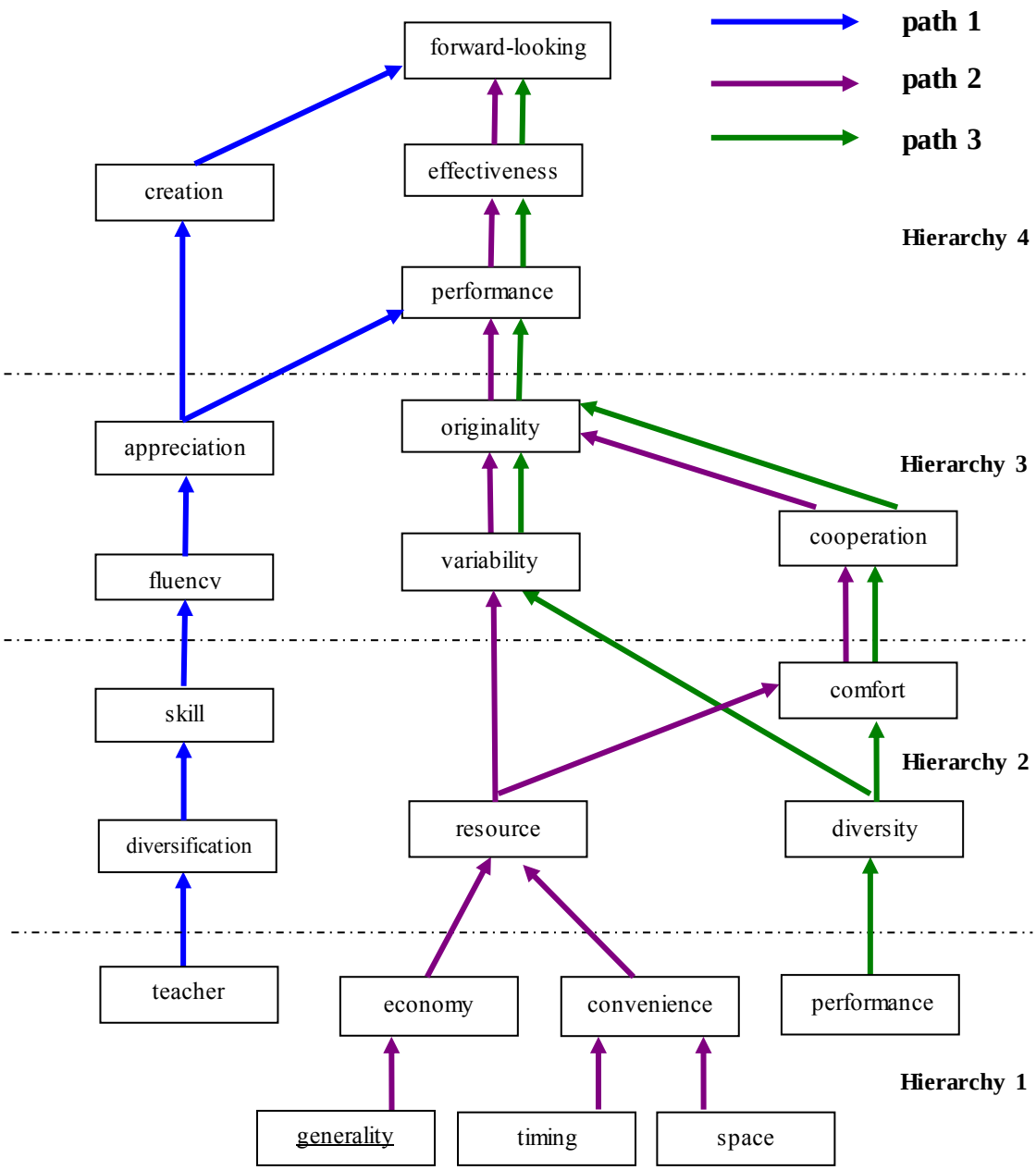

Fig. 2 The path chart of the selection strategy of choosing music schools

ability and appreciation of the music. These elements are indispensable conditions. Particularly, the music creation of the lyricist and composer needs even more inspiration and a solid musical literacy skill in order to create a classic work. To promote the cultivation of music creative talents and highlight the important characteristics of the selection strategy from the structure, teacher, diversity, skill, fluency and appreciation become the important demands of the high-quality music schools. From the interpretation of the vocabulary structure of this chosen path, the high-quality music schools can attract more students who will be engaged in music creation by emphasizing high-quality teachers. Through the influence of music appreciation, it is hoped to cultivate creative musicians or performers and push the uniqueness of the music schools to its value target.

3.6. Case II: on the middle path of Fig. 2 (path 2)

This option is defined as "the structure type of using the resources of music classes to show musical performance ability." The high-quality music schools have great relations with the school environment and space resources. This option emphasizes on adequate equipments and the comfort of learning environment, and is mainly to stress the material factors.

3.7. Case III: on the right path of Fig. 2 (path 3)

This option is defined as "the structural type of musical literacy including both personal preference and team cooperation." The music schools, which focus on the music education cultivation, emphasize on personal preference, learning interest and the importance of team cooperation. This option is mainly to stress the human factors.

According to the four divided hierarchies shown in Fig. 1, this paper carries out the expert assessment of the design criteria and identifies the sorting of important criteria. In accordance with the sorting of hierarchies one to four, they are coded as follows: (A), (B), (C), (D), then the results of the assessment information are written to obtain the matrix shown in Table 1. The weight value (Weight) is obtained from the calculation of the AHP software, and the C.I. value is less than 0.1. To con-

firm the validity of the information, the consistency test is passed. The sorting of the four hierarchies criteria are (D) > (C) > (B) > (A).

In 1989 Deng proposed the Grey System Theory. This study aims to use grey relational analysis by applying the data into MATLAB grey system for the establishment of standard sequence and comparative and sequence calculate the weight values and the sequence in new product design [1] [2]. The grey relational analysis theory can be used to manage the uncertain, multi-dimensional, discrete, and incomplete data. The main function of GRA is to calculate the discrete data and quantify the factors. Through the ordinal process, the information can be translated and there are many successful researches [3] [4] [5] [6].

The researchers further select path 1 to 3 to conduct computation of the gray associated degree matrix, that is, the best-fit selection strategy associated computing matrix. The assessment results at this stage are shown in Tables 2 to 5. The C.I. values in these tables are all less than 0.1, passing the consistency test of assessment survey. The assessment matrix in Tables 2 to 5 are then used to conduct the grey relational degree calculation, and the best-fit option operational matrix is shown in Table 6.The study results show that Case II, the structure type of using the resources of music classes to show musical performance ability, is the best-fit selection strategy in this study.

4. Conclusion

In this study, the combinations of Nagai method (5W1H), AHP, ISM and GRA are used to establish selection programs and assessment models for choosing music schools. During the study, we use the expert survey assessment method which becomes an indicator for the research structure model, because the efficiency is high in clarifying the survey data through the analysis of the data information. Through the difference of LGRA coefficient values, we find the best option is "the structure type of using the resources of music classes to show musical performance ability." The results of this study can provide parents with more comprehensive considerations to choose music schools.

Table 1 Selection criteria paired comparison matrix

	(A)	(B)	(C)	(D)	Weight
(A) Resource	1	1	1/3	1/5	0.11
(B) Skill	1	1	1	1/3	0.17
(C) Appreciation	3	1	1	1	0.29
(D) Creation	5	3	1	1	0.43
C.I. = 0.062					

Table 2 Assessment table for (A) resource criterion

(A) Resource criterion	Case (1)	Case (2)	Case (3)	**Gamma value**
Larger-the-Better	3	1	5	
(1) music performers or musical creative talents	1	1/3	1	0.0046
(2) using the resources of music classes to show musical performance ability	3	1	5	1.0000
(3) musical literacy including both personal preference and team cooperation	1	1/5	1	0
***C.I.*=0.015**				

Table 3 Assessment table for (B) skill criterion

(B) Skill criterion	Case (1)	Case (2)	Case (3)	**Gamma value**
Larger-the-Better	1	3	5	
(1) music performers or musical creative talents	1	3	5	1.0000
(2) using the resources of music classes to show musical performance ability	1/3	1	2	0.2335
(3) musical literacy including both personal preference and team cooperation	1/5	1/2	1	0
***C.I.*= 0.002**				

Table 4 Assessment table for (C) appreciation criterion

(C) Appreciation criterion	Case (1)	Case (2)	Case (3)	**Gamma value**
Larger-the-Better	3	2	1	
(1) music performers or musical creative talents	1	1/2	1/3	0
(2) using the resources of music classes to show musical performance ability	2	1	1/2	0.4205
(3) musical literacy including both personal preference and team cooperation	3	2	1	1.0000
***C.I.*= 0.005**				

Table 5 Assessment table for (D) creation criterion

(D) Creation criterion	Case (1)	Case (2)	Case (3)	**Gamma value**
Larger-the-Better	1	5	3	
(1) music performers or musical creative talents	1	5	3	1.0000
(2) using the resources of music classes to show musical performance ability	1/5	1	1/2	0
(3) musical literacy including both personal preference and team cooperation	1/3	2	1	0.2335
***C.I.*= 0.002**				

Table 6 The best-fit option operational matrix

Criteria	**(A)**	**(B)**	**(C)**	**(D)**	**LGRA value**
Larger-the-Better	**1**	**1**	**1**	**1**	
(1) Case I (path 1)	0.0046	1.0000	0	1.0000	0.8912
(2) Case II (path 2)	1.0000	0.2335	0.4205	0	1.0000
(3) Case III (path 3)	0	0	1.0000	0.2335	0
Sorting result	**(2) > (1) > (3)**				

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