

# A Study on the Interpretive Structural Model to Discuss the Analysis of Curriculum Planning and Benefit among Cosmetology and Hair Salon Professional Courses in College - Department of Cosmetic Applications and Management

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## Abstract

This research aims to analyze the Curriculum planning and benefit between departments of beautification in college and the professional courses by using ISM. To understand the link between different professional courses of beautification in college and find out the connections, Department of Cosmetic Science will be taken as an example. The result will benefit to future developing plans of the courses in Department of Cosmetic Science. The object of this research is all Department of Cosmetic Science in college in Taiwan. All professional courses related with Department of Cosmetic Science were discussed. The content and hierarchy of courses were analyzed and summarized by using ISM. By clarifying the suitability of them as well as promoting Department of Cosmetics Science's future development, all three parties, including the courses, lecturers and students, can achieve the best effect from this research.

**Keywords:** *interpretive structural model; ISM model; course; five-year junior colleges; department of cosmetic applications and management*

## 1. Research Background and Purpose

### 1.1 Research Background

The fast propagation of popular information and the constantly new release of services in cosmetology and hair salon industries have impelled the “beauty economies” industries to thrive. Taiwan’s economic development eventually shifts to “industry planned economy” based services, where hair salon and cosmetology industries account for the majority in “unclassified other service category,” including hair salon, cosmetology and beauty as well as other category. Industries involving hair salon, cosmetology and skin care, cosmetics, manicure, and body sculpturing without involving medical procedures are operated in forms of individual workshops and large chain stores of patented commercial brands (DGBAS, 2011). Moreover, the thriving development of cosmetics market and cosmetology and anti-aging market also draws increasing demand for professionals in cosmetics application management, fashion styling, and cosmetology and hair salon (Wei, Jiayi, 2010). DGBAS (2012) suggested that the number of employed in service industries has accounted for 54.74% of the total employment population since 2010, showing a 2.16% increasing trend annually, suggesting that the demand for cosmetology and hair salon related industries have increased in the economy market over the years.

Relevant studies also reveal that the average women aged between 18-45 in recent years spend at least over NTD5000 on styling and makeup each year while the annual market scale for cosmetology and hair salon have at least exceeded NTD1.5 billion with at least 70,000 to 80,000 people working in related work each year (Public

Health Bureau, Yilan County, 2016). The survey on job opening released from the two major online human resource banks in Taiwan showed the job opening information on August 8, 2017: 6,312 job openings in hair salon, 390 job openings in manicure, 1,581 job openings in aroma therapy, 1,234 job openings in SPA, 747 job openings in cosmetics... (1111 Human Resource Bank, 2017), 12,242 job openings in cosmetology books, 1,672 job openings in cosmetics... (104 Human Resource Bank, 2017) and multiple job openings were only release on one particular day. The job openings of cosmetology and hair salon suggest the urgent demand for talents. To provide the refined human resource quality of the industry, five-year junior colleges have become one of the important channels for fostering intermediate technicians. The Ministry of Education (2016) statistics reveal that there are 16 five-year junior colleges in Taiwan that have established cosmetology related department/majors as of now, among which 7 departments/majors have been named by Department of Cosmetic Applications and Management, which accounts for nearly 50% of college education market.

It is stipulated in Article 1 of Junior College Law announced by the Ministry of Education (2014) that junior colleges should instruct on applied science and technology in order to foster practical professionals. Five-year junior college is a linking education after graduation from junior high school, while the curriculum of five-year junior college cosmetology related departments are is more flexible and diverse. Practice selective courses are also provided for five-year junior college students to have more practical courses and internship experience in cosmetology, hair salon and manicure, compared with the regular junior high school and vocational schools. Five-year junior college cosmetology related departments feature the follows: (1) Counseling students with passing relevant Class B and Class C certifications in order to prepare students with future competitiveness for advanced study or employment. (2) Off-campus internship courses allow students to intern in relevant industries, such as hair salon, cosmetics biotechnology company, cosmetology, wedding industry, manicure industry, skin care and aroma therapy...etc. and other enterprises, counseling students on the choice between advanced study and employment after graduation (Ministry of Education, 2014).

In response to the refining trends of relevant cosmetology industries, the cultivation of five-year junior college cosmetology education system in intermediate industry becomes increasingly more important. Such junior colleges not only bear the mission of developing the development of human resource in intermediate level but also build the foundation for advanced vocational and technical education. Nonetheless, some recent studies reveal that the current cosmetics industry of Taiwan is facing issues in human resource shortage and inadequate technology (Wei, Jiayi, 2010). Such phenomenon merits future analysis on the curriculum design of department of cosmetics application and management in five-year junior colleges, the association between the courses, and the effectiveness of course execution. In view of this, the paper applies Interpretive Structural Model (ISM) to analyze the design and effectiveness of professional curriculum in five-year junior college department of cosmetology application and management. Consequent, the paper will discuss and clarify the hierarchical relation between the layers of professional curriculum and the curriculum, as well as the effect produced from the school, students and relevant industries.

### *1.2 Research Purpose*

The paper aims to adopt “Interpretive Structural Model (ISM)” in the exploration of A Study on the Interpretive Structural Model to Discuss the Analysis of Curriculum planning and benefit among Cosmetology and Hair Salon Professional Courses in College - Department of Cosmetic Applications and Management” to understand the association and links between the professional courses in five-year junior college department of cosmetics application and management, thereby integrating the hierarchical relation of course implications to facilitate the design and development of courses in five-year junior college department of cosmetology application and management. The research meaning and contributions can be adopted as basis and reference on the design course of the overall department of cosmetology application and management, assisting junior colleges with development in cosmetology application and management course development. Consequently the maximum benefits of department courses, teaching and students learning will be highlighted. The study executes the following purposes:

(1) Assisting the course hierarchy structuring in the professional courses of five-year junior college cosmetology design education- department of cosmology application and management

Interpretive Structural Modeling (ISM) applies the different types of elements and relations composing structure to clarify complex patterns (Zhang, N., 2007). ISM computer programming is applied with quantitative and mathematical logistics to analyze the complex course components, in order to effectively clarify the hierarchical association between all professional courses in five-year junior college cosmetology design education- department of cosmetology application and management.

(2) Analyzing the course association concepts between all professional courses in five-year junior college cosmetology design education –department of cosmetology application and management

The ISM computer system tool is applied to analyze the conceptual elements of professional courses in five-year junior college cosmetology design education- department of cosmetology application and management. The courses undergo mutual logistics association and computation processing to yield the association concept map of vector hierarchical frameworks and cross-links, which features the function of assisting the integration of course association and establishing a complete course map for five-year department of cosmetology application and management.

(3) Upgrading the effectiveness of professional courses in five-year junior college cosmetology design education- department of cosmetology application and management

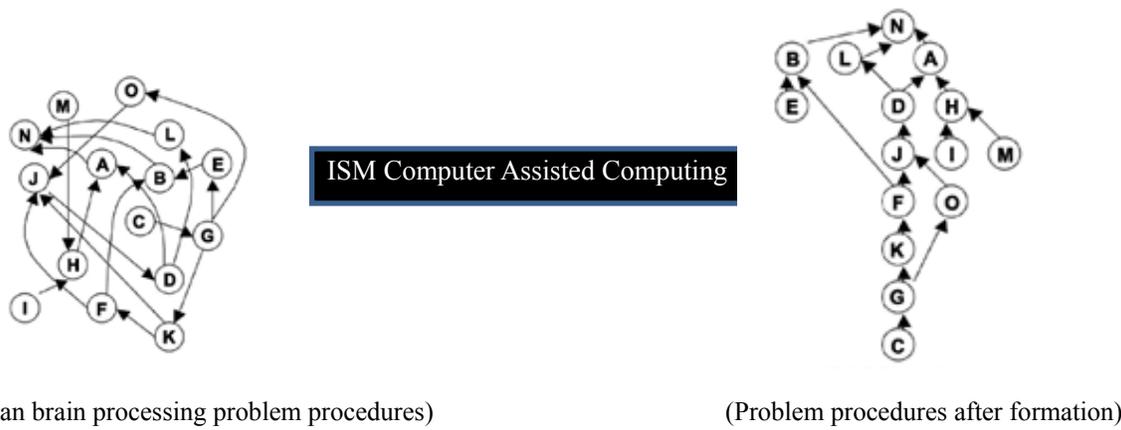
ISM can be applied to analyze the concept of course design, association structure, and hierarchical development course to achieve the teaching effectiveness. For example, ISM can review and analyze the execution of professional courses in cosmetology design education- department of cosmetology application and management in response to the standards of department education, teachers’ teaching objectives and the needs for students’ advanced study and employment.

**2. Literature Review**

The following discussion emphasized on the relevant literature related to “Interpretive Structural Model” and “Five-Year Junior College –Department of Cosmetology Application and Management Courses.”

*2.1 Interpretive Structural Model(ISM)*

Interpretive Structural Modeling (known as ISM) was proposed by John N. Warfield in 1976. The steps and procedures of ISM compile the relevant information on social system engineering, so that complex information source becomes the structure modeling of identified organization structure, which turns the relation between complex elements into overall association structure as well as displaying the interaction and illustrations at different hierarchies (Zhang, N., 2007). Alias, et al(2013) suggests that ISM can identify the elements of complex problems and the relation, which assists individuals or groups with development of modeling or map. ISM can also be applied to identification and analysis of the relation between specific variables. Hierarchical digraph in graphic theory of association structure can present the vertical, horizontal and overall association structure, and reflect the complex issues of relation between reflection elements and subsequent structure. Chen, Shih-Ho. (2006) suggests that ISM computer programming can conduct matrix computation to conver the complex thinking procedures in human brain to associated and systematic structure (Figure 1.), so that the association between the organization and concepts become clearer.



**Figure 1.** ISM Converts Complex Thinking Concepts into Systematics Procedural Map

Zhang, N. (2007) suggests that ISM is operated through the interaction between human and computer, where human is responsible for the decision while the computer is responsible for the computation and displaying the results of logistics operation. ISM is applied to the scope of course association and hierarchy and must be designed for a series

of “Is Course A associated with Course B” or similar questions, while the concept of binary matrix yields the answers only in values of 1 (indicating yes) or 0 (indicating no), which is usually determined by the resolution of majority of responding groups after entering into the ISM system.

The characteristics of Interpretive Structural Modeling will assist the course with hierarchical allocation and design of association structure. Abdullah, et al (2014) adopted Interpretive Structural Model (ISM) in the development of course learning model, regarding the relation of courses as elements and producing the overall structure. Furthermore, the association undergoes graphic modeling with description, using steps of ISM: (1) Experts validating course problems or relevant elements (2) Validating the vertical and horizontal association and structure of courses. (3) Experts develop the structural relation between course and learning capacity. (4) Producing Course ISM: A and B is related (written as  $A \rightarrow B$ ), B and C is related (written as  $B \rightarrow C$ ), A and C is related (written as  $A \rightarrow C$  or  $A \rightarrow B \rightarrow C$ ). (5) Experts review and modify course ISM. (6) Submit the final course ISM.

### *2.2 Course Overview of Five-Year Junior College- Department of Cosmetology Application and Management*

It is stipulated by the Ministry of Education (2014) that the regulations governing certification for five-year junior college –Department of cosmetology application and management courses pursuant to Article 28 of Junior College Law is limited to 5 years. However departments of special nature that requires increase or decrease of study years depending on the teaching shall be reported to the Ministry of Education for approval. Moreover, the require credits for five-year junior colleges may not fall under 220 credits. The course can be generally divided into: required and selective subjects, where the required subjects require passing grades before graduation. Depending on the course features of all schools, the electives may be designed in courses related to cosmetology and styling design.

Currently there are 6 schools in Taiwan that have established five-year junior college –department of cosmetology application and management, including: National Tainan Institute of Nursing – Department of Cosmetology Applications, Mackay Junior College of Medicine, Nursing, and Management- Department of Cosmetic Science and Management, Cardinal Tien Junior College of Healthcare and Management- Department of Cosmetics Application & Management, Yuh-Ing Junior College of Health Care & Management - Department of Cosmetic Application and Management, St. Mary’s Junior College of Medicine, Nursing and Management – Department of Cosmetic Application and Management, and Nanya Institute of Technology- Department of Applied Cosmetology. In particular, five of the schools are vocational schools under medical systems and one belongs to a regular or average technology university (Ministry of Education, 2017).

Features of five-year junior college – department of cosmetology application and management curriculum includes: (1) First three years consist of fundamental technical courses in cosmetology, hair salon and cosmetics to counsel students with acquiring Class C certifications in cosmetology, hair salon and chemistry. (2) The fourth and fifth year students of five-year junior colleges receive counseling on passing Class B certification for cosmetology, women’s hair, and men’s hair in response to personal interests. (3) Fourth and fifth year students will be scheduled to execute internship courses. Internships comprise one-year-, half-year, and winter/summer vacation systems, where students enter industries related to cosmetology, hair salon and manicure. For example, hair salon, cosmetics biotech companies, wedding industries, manicure industries, skin care and aroma therapy, are companies where students can be disciplined with practical capacity upon entering the workplace while students can also increase observation capacity for customers. The students will understand or participate in the administrative operation of practical institutes for cosmetology and hair salon, in attempt to enhance student’s enthusiasm for practice through the experience and learning of internship (Ministry of Education, 2016).

The online information for five-year junior college student recruitment from the Ministry of Education (2017) corresponds with the course design of five-year junior college – department of cosmetology application and management supporting the certification examinations. Most schools counsel first-year students with Class C cosmetics, second-year students with Class C hair salon and third-year students with Chemistry Class C certification. The first three years emphasize on fundamental knowledge and skills on cosmetics, cosmetology and hair salon, including cosmetics overview, cosmetics chemistry, skin beauty practice, and cosmetology health study. At the fourth and fifth years, students take advanced courses in cosmetics and overall styling and are counseled with passing relevant Class B certification. Moreover, off-campus internship courses are designed along with the management courses related to cosmetology and cosmetics, thereby developing students with cosmetics technology, cosmetics sales and management, and fashion cosmetology and hair salon techniques, to develop the post-graduation career plan of individuals.

### 3. Research Method

The paper is implemented through qualitative and quantitative research method. Qualitative research includes document analysis, focus groups interview while quantitative research applies ISM software to collect and analyze data, in order to collect and clarify the hierarchical relation of course content, facilitating the design and development of five-year junior-college – department of cosmetology application and management courses. The following is an introduction to the research method and implementation procedures:

#### 3.1 Using Interpretive Structural Model (ISM) to Conduct Quantitative Questionnaire Data Analysis

The study compiles the cosmetology application professional courses of 6 five-year junior colleges in Taiwan, extracting 45 professional courses with the same or similar names to design into the questionnaire for Interpretive Structural Model. The questionnaire is distributed to experts, scholars, industries, and teachers for testing. Approximately 35 respondents will take the questionnaire while the association, links and hierarchy between professional courses are analyzed for use as reference on course planning. Interpretive Structural Model undergoes course illustration to discuss and analyze the casualty between courses for hierarchical purposes, discussion the directional implications of courses, thereby conducting analysis on the course effects.

#### 3.2 Document Analysis

The collection of Interpretive Structural Model, ISM related research and journals, the sorting of relevant theoretical foundation and structure of the text, and the compilation of course guidelines for professional courses of five-year junior college – department of cosmetology application and management are extracted with commonly developed compulsory and elective courses to draft the fundamental framework of questionnaire survey course.

#### 3.3 Focus Group Interview – Focus Group

Focus group is an interview technology for conducting research depth focus, where the researcher collects data from validated research themes through group interaction, which applies to attitude behavior or decision making. The advantage is the collection of comments and experiences from participants easily and quickly (Li, Z. W., 2006). The focus groups of Morgan (1997) discusses for about 2 hours per session, composed of strangers with the same background or familiar people. Ceng, S. H. (2002) believed that the focus group should at least have two or more attribute groups to discuss research issues. Krueger & Casey (2000) indicated that the members of focus group interview usually consists of 6-10 people while the number of interviews for focus group interview may continue with the group interview depending complexity of problems, data saturation; namely constant new data or themes, until reaching the point of data saturation. The research focus group conducts interview with 6 members consisting of experts, teachers, cosmetology and hair salon industries for the five-year junior college- department of cosmetology application and management to draft the research issues.

### 4. Data Analysis

The study is implemented through qualitative and quantitative methods, using Interpretive Structural Model software version “concept satr 3.64” to conduct the design of professional courses and the effect analysis of five-year junior college – department of cosmetology application and management. The research method is approximately divided into three phases: (1) Compiling the course data of five-year junior college –department of cosmetology application and management in Taiwan with integration of interview and group focus to profoundly understand the course content. (2) Extracting 45 course testing factors from the co-developed courses of all schools. (3) The Interpretive Structural Model analysis approach is applied to establish the hierarchical structure of five-year junior college – department of application and management courses. The course framework of five-year junior college – department of cosmetology application and management are extracted to develop common 45 subjects (see Table 1.)

**Table 1.** Content of Courses Co-Developed for the Five-Year Junior College- Department of Cosmetology Application and Management in Taiwan

1. Skin Care Professionalism and Practice	2. Introduction to Cosmetics	3. Cosmetics Blending Experiment	4. Special Makeup Effect	5. Aroma Therapy Practice
6. Cosmetology Workplace Health and Safety	7. Fashion Cosmetics Design	8. Cosmetology Meridian and Practice	9. Artistic Creativity, Painting and Design	10. Entrepreneurship Planning and Management
11. Facial Care Professionalism and Practice	12. Skin Physiology	13. Manicure Fashion Art	14. Cosmetology and Health	15. Brand and Advertising Marketing
16. Hair Salon Professionalism and Practice	17. Cosmetics Chemistry	18 Off-Campus Internship	19. Food Therapy	20. Store Services
21. Introduction to Home Economics	22. Introduction to Medical Cosmetology	23. Introduction to Management	24. Pose and Etiquette	25. Cosmetics Formula
26. Chemistry Laboratory	27. Beauty and Nutrition	28. Marketing and Management	29. Hair Style and Artistic Design	30. Cosmetics Biochemistry Technology
31. Professional English in Cosmetology	32. Occupational Ethics	33. Project Design and Production	34. Wedding Planner and Wedding Practice	35. Natural Ingredient Cosmetics
36. Interface Chemistry	37. Cosmetics Laws and Regulations	38. Spices and Perfumes of Cosmetics	39. Apparel Wear and Style Design	40. Analytical Chemistry Practice
41. Chromatics	42. Evaluation of Cosmetics Performance	43. Overall Style Design	44 Accessory Design and Practice	45. Cosmetics Inspection

The aforementioned course factors from the questionnaire undergo software analysis, yielding the analytical map of Interpretive Structural Model (Figure 1.) for five-year junior college-department of cosmetology application and management courses, as described below:

#### 4.1 Hierarchical Analysis

The hierarchical analysis of Interpretive Structural Model mainly divides the course into four hierarchies, including the fundamental courses, advanced courses, practical courses, and integration courses, as described below:

(1)Fundamental Course: The content includes 7 groups and 17 courses. In particular, [2. Introduction to Cosmetics][3. Cosmetics Blending Experiment][17. Cosmetics Chemistry][25. Cosmetics Formula][37. Cosmetics Laws and Regulations][38.Spices and Perfumes of Cosmetics] are six courses with mutual influence and are hence defined as [Cosmetics Fundamental Course Group]. Moreover, [1. Skin Care Professionalism and Practice][8.Aroma Therapy and Practice ][11. Cosmetology Meridian and Practice]and [12. Skin Physiology] are the four courses with mutual influence relation, which are defined as [Cosmetology Skin Care Fundamental Courses]. The two courses affecting each other, including the food and nutrition courses between[19. Food Therapy]and[27. Beauty and Nutrition] and the hair salon courses between[16. Hair Salon Professionalism and Practice] and [29. Hair Style and Artistic Design]. Such fundamental course is suitable for implementation at the first and second year.

(2)Advanced Courses: The content includes 10 courses and 8 groups. This section of courses is less likely overlapped and mostly courses with association connecting fundamental course and practice courses. The group with mutual influence includes [4. Special Makeup Effect], [41. Chromatics] and [39. Apparel Wear and Stylish Design] and [44. Accessory Design and Practice] in apparel style courses. Others include the[14. Cosmetology Care and Health][22. Introduction to Medical Cosmetology] under medical cosmetology and health. [42. Evaluation of Cosmetics Performance] under cosmetics category and [13. Fashion Manicure Art] and [33. Project Design and Production] under overall styling category. Such course can be implemented in third year.

(3) Practical Application Course includes 7 courses in 5 groups. In particular, courses with mutual influence are [26. Chemistry Laboratory] [36. Interface Chemistry] and [40. Analytical Chemistry Practice] under chemistry related courses. The most important course at this phase is the [18. Off-campus Internship], which are the practical application of the first two phases of courses. Hence, such courses can be arranged in fourth year.

(4) Integration Course: This phase comprises 10 courses in 3 groups, including cosmetics integration group, brand entrepreneurship integration group, and the overall styling design group. The cosmetics integration group is mainly composed of three courses, including [30. Cosmetics Biochemistry Technology] [35. Natural Ingredient Cosmetics] [45. Cosmetics Inspection]. [10. Entrepreneurship Planning and Management][15. Brand and Advertising Marketing] [20. Store Services] [23. Introduction to Management] are courses of brand entrepreneurship integration. Moreover, the overall styling designs include [7. Stylish Cosmetics Design], [9. Artistic Creativity, Painting and Design], [43. Overall Styling Design] and other courses. Such courses are the results presented from mostly integration of fundamental, advanced and practical courses, which are suitable for implementation at the 5<sup>th</sup> year.

#### 4.2 Course Orientation Analysis

The analysis of course direction can help understanding the orientation which the department intends to cultivate the talent, including [Cosmetics Professionalism], [Cosmetology and Hair Salon Industry Management] and [Fashion Design]. The direction of the three courses are analyzed and described below (Figure 2.):

##### (1) Cultivation of Cosmetics Professionals

The professionalism of cosmetics, from introduction to cosmetics, cosmetics blending laboratory, cosmetics chemistry, cosmetics formula, cosmetics laws and regulations, and spices and perfumes of cosmetics are courses containing fundamental group concepts of cosmetics categories. First, introduction to cosmetics is the foundation for cosmetics related subjects, including the properties of cosmetics materials, blending procedures, inspection analysis, and performance evaluation as well as other knowledge. Second, the cosmetics blending course will help students learn the theoretical procedures of cosmetics blending and the completion of finished products. The production of finished products will boost the confidence and interest in students. Moreover, cosmetics chemistry enhances students' knowledge in the properties of cosmetics materials, incompatibility, and effectiveness, which facilitates the learning of other cosmetics related subjects. Then, the course can lead to advanced courses in [42. Evaluation of Cosmetics Performance] which assist students pass chemistry skills certification. In practice courses, chemistry related courses such as [26. Chemistry Laboratory], [36. Interface Chemistry] and [40. Analytical Chemistry Practice]. These courses are the required course for the future cosmetics biochemistry technology. Some course experts suggest that the "chemistry laboratory" is the fundamental theory to cosmetics, however there is cosmetics chemistry course and hence the it is suggested to define the course as advanced cosmetics course, cultivating students with more in-depth cosmetics research. Moreover, [30. Cosmetics Biochemistry Technology], [35. Natural Ingredient Cosmetics] and [45. Cosmetics Inspection] are three integration courses. Nonetheless some course experts believe that natural ingredient cosmetics and cosmetics biochemistry course are highly overlapping in content, and hence it is suggested to consolidate the natural ingredient cosmetics into the scope of cosmetics biochemistry technology. The name of cosmetics biochemistry technology course is renamed to biotech cosmetics or cosmetics technology course in order to cultivate the professional talents in the overall cosmetics blending in-depth.

##### (2) Cultivation of Cosmetology and Hair Salon Management Talents

For fundamental courses such as aroma therapy practice, cosmetology meridian and practice, facial professionalism and practice, skin physiology and other cosmetology and skin care courses can assist students pass the cosmetology skills certification. Moreover, the content of skin care professionalism involves health and safety section while expert suggestions are compiled to change the title of cosmetology workplace health and safety course into cosmetology health. Such type of fundamental courses will direct advanced courses such as [14. Cosmetology Care and Health] and [22. Introduction to Medical Cosmetology]. Cosmetology courses will continue to affect the [18. Off-Campus Internship] in practice and application layer. For the knowledge of industry categories are compiled for off-campus internship courses, including cosmetology courses, fundamental hair salon courses, and advanced [13. Fashion Manicure Art] which will have influence on off-campus internship courses. Prior to executing off-campus internship, it is suggested opening occupational ethics courses for advanced course fields in order to foster students with basic workplace recognition capacity prior to internship. Students will be developed with understanding of the occupational ethics and moral concepts in the workplace.

Moreover, since internship industry belongs to services industry, the internship course will build up the basic capacity of students in marketing and management. However, some course experts suggest consolidating the

marketing management course and brand and advertising marketing course, or modifying the name of marketing and management course during the interview due to the similarity between the course content. For example, career development and plan. Courses on the integration layer mostly consist of group courses of management category. However some course experts suggest modifying the name of store service course, since the content of store service in terms of management and operation or off-campus internship have all been covered in other courses. Many students also have part-time experience in stores, unless if it is a requirement training for store service certification. Many other types of course design are intended to cultivate the managers in the operation of cosmetology and hair salon service industries.

(3) Overall Styling Design Talents Cultivation

In the cultivation of fundamental courses, courses under cosmetics category and courses under fashion hair salon design are emphasized with hair style fashion and art design being the group course. Students will be provided with counseling on passing the hair salon skills certification. The integration of special makeup effect and apparel wear design in [33. Project Design and Production], students can conduct in-depth analysis and creative design of all fields according to the domains in cosmetics and styles. With regards to practical application, wedding planner and practical course compiles what students have learned: Apparel wear style design, accessory design and practice, and capacity in project production, which are also the key foundation of style group courses. The fashion cosmetics design, Artistic Creativity, Painting and Design, and overall style design are the style group courses, which can develop the knowledge and skills needed for students to engage in future styling and design related industries.

4.3 Comprehensive Discussion

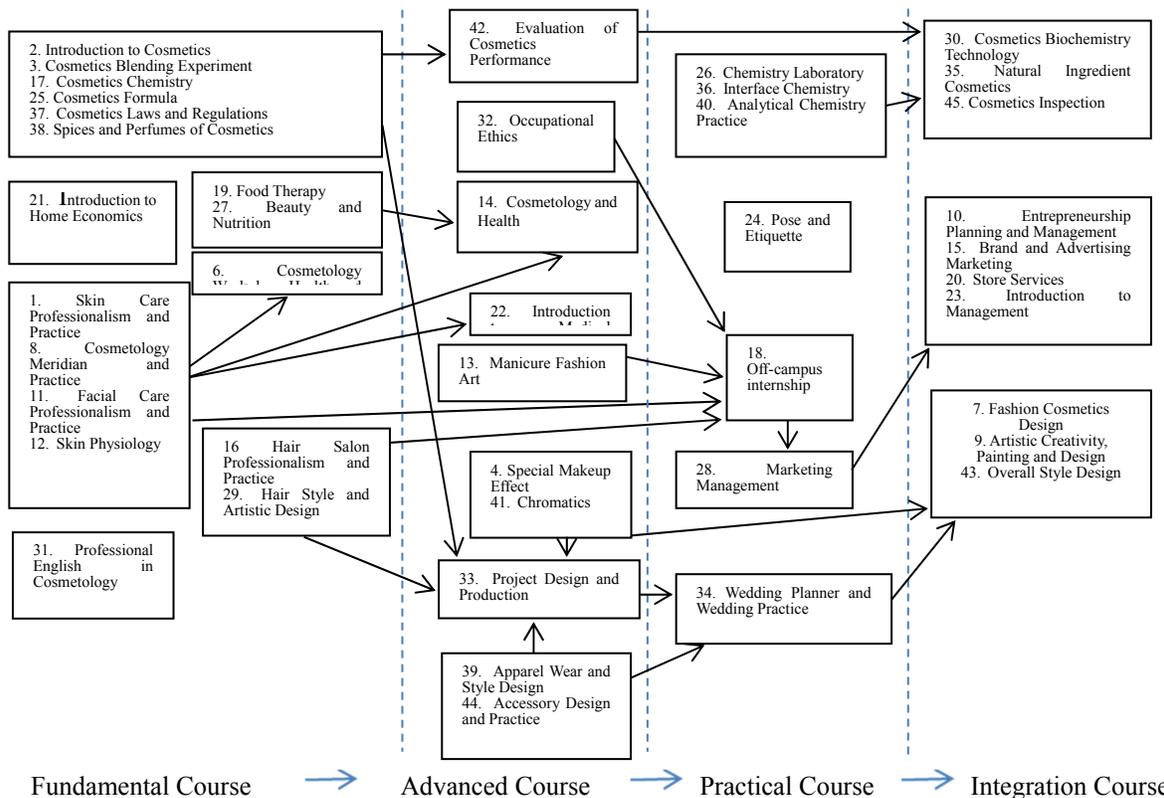


Figure 2. Analytical Map of Interpretive Structural Model for Five-Year Junior College-Department of Cosmetology Application and Management Courses

This section emphasizes on Interpretive Structural Model, supplemented by the experts and scholars of focus group interview to compile and analyze the following suggestions.

(1) Food therapy and beauty and nutrition are course group relations, which can be used as foundation for the future beauty care health courses for the third year. Students can be assisted with learning foundation in advancing to higher grades. Nonetheless the expert interview for this section of course also suggests that the food therapy belongs to

nutrition course but the course contains beauty and nutrition, hence the course is suggested for modification into food therapy design.

(2) Most experts believe that introduction to home economics is a common knowledge while most of the content has been discussed in-depth in various courses, which takes consideration of modifying the course name or deletes the name.

(3) There is less association between professional English in cosmetology and other courses, while experts suggest consolidating some courses into general education – language course without having to establishing the course into one independent course.

(4) ISM software analysis shows that pose and etiquette course has smaller association relative to other types of courses. Experts suggest changing some courses into performing arts or stage art courses, thereby assisting students with the need for overall styling module of graduation exhibition, and cultivating students with the capacity to perform on stage.

## 5. Conclusion and Suggestions

### 5.1 Conclusion

The main purpose of vocational education aims to cultivate the benevolence needed for national economic development while the technical skills of technicians not only are related to the promotion of industry upgrade but also one of the key influences to national economic development. For this reason, the course content design of vocational education is highly important for the cultivation of human resource. Ho, Hui-Chung., et al (2012) suggested that the use of mathematical orientation analysis course and the course approaches using Interpretive Structural Model (ISM) an convert the relation of different types of courses in complex systems into specific and overall association structure hierarchical illustration. The association structure map is applied to conduct the hierarchical digraph in graphic theory to further clarify the vertical, horizontal and overall view of the course content as well as the hierarchical association structure. Moreover, the system will yield the foundation of relevant course structure, creating the association structure of course module. The following conclusion is drawn from the findings analysis of the study:

(1) According to the document analysis sorted, interview data and ISM, the study has compiled the five-year junior college – department of cosmetology application and management courses to divide the compulsory and elective courses co-developed by all schools into three constructs, including “Cosmetics Course,” “Management Course” and “Styling Course.”

(2) For professional certification development, the five-year junior college fundamental courses provide counseling on passing the Class C Technician Skills Certification for Cosmetology and Class C Technician Skills Certification for Women’s hair. The advanced courses in five-year junior college schedule for the Class C Technician Skills Certification of Chemistry. The practical course and integration course in five-year junior college properly design relevant occupational Class B technician skills certification or increases the Class C course for store services, thereby expanding the competitiveness of students in future advanced study and employment.

(3) To enlighten students with learning interests and enhancing students with flexibility in using what they have learned to conduct exploring and thinking based in-depth study, the research results are suggested to develop project design and production for advanced course in five-year junior college, so that students can conduct macro study on the cosmetics modules and styles. Moreover, students can apply pre-knowledge to conduct in-depth research on the issues, expand students with broader learning horizon and help them with future career choice.

(4) To supply the cosmetology and hair salon industry with abundance of human resources, the Ministry of Education actively promotes and implements off-campus internship courses for students. The internship method includes one-year system, half-year system and winter/summer vacation system. The study compiles ISM data analysis and interview. It is suggested designing the off-campus internship courses in the practical course field in order to equip students with certain basic skills and knowledge on one hand and provide students with sufficient and plenty of time on the other hand, preparing them for advanced study or employment after graduation in the future.

### 5.2 Suggestions

#### (1) Suggestions for Curriculum

The ISM data analysis and interview are compiled to design the five-year junior college course in cooperation with links to occupational skills. The course naming does not need to be very specific. For example, natural ingredient

cosmetics and cosmetics biochemistry technology courses are highly overlapping in content and hence the two courses titles are suggested for consolidation, renaming cosmetics biochemistry technology course into biotech cosmetics course or cosmetics technology course as well as taking consideration of deleting courses unrelated to the course; i.e. professional English in Cosmetology, introduction to home economics, and beauty and etiquette course.

## (2) Suggestions for Future Research

One of the course features of five-year junior college –department of cosmetology application and management is that students are provided with counseling to pass relevant skills certification. To understand the association between course structure and various certifications, further in-depth study on the core competency of professional course content and skills certification are recommended so that the course structure of five-year junior college – department of cosmetology application and management will be further improved.

## References

- 104 Human Resource Bank (2017). *Job opening query*. Retrieved from [http:// www.104.com.tw/](http://www.104.com.tw/)
- 1111 Human Resource Bank (2017). *Job opening query*. Retrieved from <http://www.1111.com.tw/>
- Alias, Norlidah, Rahman, Mohd. Nazri Abdul, Siraj, Saedah, & Ibrahim, Ruslina. (2013). A Model of Homeschooling Based on Technology in Malaysia. *Malaysian Online Journal of Educational Technology*, 1(3), 10-16 .
- Abdullah, Muhammad Ridhuan Tony Lim., Siraj, Saedah., Asra., Hussin, Zaharah. (2014). Interpretive Structural Modeling of MLearning Curriculum Implementation Model of English Language Communication Skills for Undergraduates. *The Turkish Online Journal of Educational Technology*, 13, 151-161.
- Ceng, S.H. (2002). *Education Proposal Accreditation*. Taiwan: Shita Books.
- Chen, Shih-Ho. (2006). *A Study on Applying Modular Design and Market Segmentation in Product Family Development-Take Bike Industries for Example* (Unpublished master's thesis). National Cheng Kung University, Taiwan, ROC.
- DGBAS [Directorate-General of Budget, Accounting and Statistics, Executive Yuan] (2011). *Taiwan Standard Industrial Classification*. Taiwan: Author.
- Directorate-General of Budget, Accounting and Statistics, Executive Yuan (DGBAS) (2012). “*Human Resource Use Survey*” sponsored each May. Retrieved from <http://statdb.cla.gov.tw/html/svy00/0003analyze.doc>
- Ho, Hui-Chung., Masatake Nagai., Sheu, Tian-Wei., Tzeng, Jian-Wei., & Tsai, Ching-Pin. (2012). Study on Visualization of Philosophy of Education Curriculum Design based on ISM-Concerning Part of Philosophy Course. *Journal of Research on Measurement and Statistics*, 20(1), 115-150.
- Krueger, R. A., & Casey, M. A. (2000). *Focus group: A practical guide for applied research*(3<sup>rd</sup> ed.). CA: Sage. <https://doi.org/10.1037/10518-189>
- Li, W.Z. (2006). Theoretical Exploration of Focus Group and Analysis of Educational Research Paper. *School Administrators Research Association*, 46, 183-192.
- Morgan, D. L. (1997). *Focus groups as qualitative research*. CA: Sage. <https://doi.org/10.4135/9781412984287>
- Ministry of Education (2014). *Junior College Law*. Retrieved from <http://edu.law.moe.gov.tw/LawContentDetails.aspx?id=FL008696&KeyWordHL=%e5%b0%88%e7%a7%91%e5%ad%b8%e6%a0%a1%e6%b3%95&StyleType=1>
- Ministry of Education (2016). *12-Year Compulsory Education Student Recruitment Website – Introduction to Advanced Study for Five-Year Junior College and Recruiting Schools*. Retrieved from [http://me.moe.edu.tw/junior/show\\_page.php?pid=138](http://me.moe.edu.tw/junior/show_page.php?pid=138)
- Ministry of Education (2017). *12-Year Compulsory Education Student Recruitment Website- Five-Year Junior Colleges in Taiwan*. Retrieved from [http:// www.me.moe.edu.tw/junior/search/list\\_dep2.php?clf=51](http://www.me.moe.edu.tw/junior/search/list_dep2.php?clf=51)
- Public Health Bureau, Yilan County. (2016). *Yilan County Public Health Bureau Cosmetology and Hair Salon Industry Seminar Lecture Manual*. Taiwan: Author.
- Wei, Jiayi. (2010). *The Relationships between Beautician Service Behavior and Service Quality on Beauty Service Industry* (Unpublished master's thesis). China University of Technology, Taiwan, ROC.

Zhang, N. (2007). From Complexity to Structured: The Application of Interpretive Structural Modeling. *Journal of Public Affairs Review*, 8(1),1-29.