Developing Effective Instructional Modules in International Cuisine

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INTRODUCTION

The recent emphasis on innovating for more effective teaching - learning process is on making learners actively participate in the process. Active participation of learners will increase motivation and minimize learning just the theories of a particular discipline. Learning by doing is of much value particularly in studying International Cuisine subject. This can be facilitated by making use of instructional modules which can minimize teacher intervention in the classroom.

Teaching and learning now comes in different styles and forms. Educators are now experimenting on new methods of teaching and learning which aim at improving the quality of education and the quality of products – the graduates.

One of the new methods in teaching and learning today is the modular approach, which limit teacher intervention. This style of teaching and learning is student-centered; the student must learn everything in the instructional module through his/her own effort and phase. This method deviates from the traditional classroom situation wherein the teacher presents the lesson, and the students just listen to learn the concepts presented. But teaching can only be effective when adequate and relevant instructional materials are used (Afolabi, Adeyanju, Adedafo and Falade 2006).

As new styles and forms of teaching and learning are discovered, it also comes with pros and cons; each has advantages and disadvantages as well. Educators, therefore, must devote their time and effort in assessing the efficiency of these new styles in teaching and learning.

Fabricante (2008) mentioned that with technological challenges and advancement in education, the teachers need to shift their concern to teaching students how to learn, how to be independent, and how to be self-directed so the graduates are equipped with the skills needed to deal with the changing environment. Teachers should therefore possess the skills in devising instructional materials.

Compollo (2001) stated in his study, that to calibrate the standard of education to an acceptable level, educators must continue to search for new ideas and ways of doing things. Teacher must be creative and innovative. One of these innovations is development and organization of modules and other self-learning kits.

This study wants to prove that programmed instruction, modules, workbooks and other instructional devices are essential in upgrading the knowledge, attitude and skills of the learner. It is in this argument that the researcher was motivated and encouraged to design and construct instructional modules in International Cuisine for college students taking up Bachelor of Science in Hotel and Restaurant Management and other allied courses.

Statement of the Problem

This study aimed to develop and validate the effectiveness of instructional modules in developing and enhancing knowledge, attitude and skills in the practice of International Cuisine.

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More specifically, this study tried to answer the following questions:

1. What should be the contents of the Instructional Modules for International Cuisine based on approved syllabus and TESDA training regulations?
2. What are the strengths and weaknesses of the modules as assessed by the experts in International Cuisine and how can it be improved?
3. What is the performance of the students in the control and experimental classes in the pre and posttests in terms of knowledge, attitude and skills?
4. Are there significant differences in performance of students as a result of the use of the prepared modules?

Objectives of the Study

In general, the study aimed to develop Instructional Modules in International Cuisine and validate the effectiveness of its contents.

Specifically, it aims to:

1. Identify the contents of the Instructional Modules for International Cuisine based on the approved syllabus and TESDA Training Regulations.
2. Determine the strength and weaknesses of the modules.
3. Assess the performance of students in the pre-test and post-test in the required knowledge, skills and attitude in International Cuisine.
4. Determine the significant differences in students' knowledge, attitude and skills as a result of the use of the prepared modules.

Significance of the Study

Teachers play most important part in any system of education. They are considered the most crucial input to the whole learning process and the function of teaching is the key toward critical process of learning. Therefore, there is a need to revitalize teacher education through sound research. Exploring the best methodology of teaching leading toward effective learning with the use of instructional aids will provide guidelines to bring improvement in the quality of teaching. In this connection, the study will be helpful in:

1. Revitalizing the teacher training program in the light of the study.
2. Improving and in making effective the process of learning, because the students' future depends largely on the education of teachers.
3. Providing useful information for curricular reforms.
4. Facilitating the role of teachers by offering performance consistent with the criteria for evaluating teaching outcomes.
5. Enabling the teacher to judge the appropriateness of instructional aid.
6. Assessing the usefulness of the modules to the students of Bachelor of Science in Hotel and Restaurant Management and among other Hospitality Courses which have subjects on International Cuisine. The modules will be a self-learning material of the students for their TESDA Assessment NC II.

Scope and Limitation of the Study

This study was limited to the design, development and validation of instructional modules in International Cuisine for second year Bachelor of Science in Hotel and Restaurant Management students of Marines Polytechnic Colleges, Naga City Campus.

The International Cuisine(Commercial Cooking) module has the following topics: 1) kitchen organization and lay-out, 2) tools, equipment and its uses, 3) assembling and preparing ingredients for menu items 4) preparing dairy, dry goods, fruits and beverages 5) preparing meat , seafood and poultry, 6) preparing stocks, soup and sauces, and 7) preparing hot and cold dessert. The try out and validation was conducted 2nd semester of school year 2012-2013.

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REVIEW OF RELATED LITERATURE

This chapter contains related studies and literatures taken from dissertation, thesis, books, journals and periodicals that delve into the development and validation of instructional modules.

The Philippines has achieved impressive gains in expanding access to higher education among Filipinos but there remains a need for suitable skills that will enable the nation's workforce to become more competitive and help bolster economic growth, according to World Bank Lead Economist Emanuela di Gropello (2012).

According to Dr. Patricia B Licuanan, CHED Chairperson,(2012) the government is currently pursuing important reforms to make the country's higher education system more responsive to the country's development requirements.

Along with these recent development directions in the higher education system, more particularly in pursuing important academic reforms, it is but timely to make significant contributions in the educative process through the development of effective instructional materials. However, to ensure success in this endeavor, the following literatures were reviewed to guide the researcher in the process of IM development.

Programmed Instruction

This is a method of presenting new subject matters to students in a graded sequence of controlled steps. Students work through the programmed material by themselves at their own speed and after each step test their comprehension by answering an examination question or filling in a diagram. They are then immediately shown the correct answer or given additional information. Computers and other types of teaching machines are often used to present the material, although books may also be used. *(The Columbia Encyclopedia, Sixth Edition. 2001-05,* 16 August 2007 (MEST).

Although Skinners initial programmed instruction format has undergone many transformations, most adaptations retain three essential features: (1) an ordered sequence of items, either questions or statements to which the student is asked to respond; (2) the student's response, which may be in the form of filling in a blank, recalling the answer to a question, selecting from among a series of answers, or solving a problem; and (3) provision for immediate response confirmation, sometimes within the program frame itself but usually in a different location, as on the next page in a programmed textbook or in a separate window in the teaching machine. (Joyce, Weil & Calhoun, 2000)

According to Greg Kearsley (2000): 1) Behaviour that is positively reinforced will reoccur; intermittent reinforcement is particularly effective; 2) Information should be presented in small amounts so that responses can be reinforced ("shaping"); 3) Reinforcements will generalize across similar stimuli ("stimulus generalization") producing secondary conditioning.

Skinner argued strongly against teaching that is based on punishment. According to Kristinsdóttir (2001), in a chapter of his book (1968)"*Why teachers fail",* he argued that formal education is usually based on 'aversive control'. Teaching rests on punishment and ridicule for unsuitable behaviour rather than showing a consideration for the shaping and reinforcement of responses to be learned. He also said that lessons and examinations are designed to show what pupils do not know and cannot do, rather than to expose and build upon what they do know and are able to learn. Therefore, he argued, teachers fail to *shape* their children's behaviour sufficiently, leading to inappropriate learning or to learned responses that are quickly forgotten (Skinner, 1968); E. Markle, S. (1969); Good Frames and Bad (2nd ed.) New York: Wiley.)

"Programmed instruction (PI) involved breaking content down into small pieces of information called frames. A PI textbook might contain several thousand frames of information.

Student should read a frame, then answer a question about the frame. Then they would check their answer (get "feedback") and proceed to the next frame. When PI was delivered by a "teaching machine" the possibilities for effective teaching seemed unlimited to many. Skinner argued that PI was more effective than traditional teaching methods," (Programmed Instruction, retrieved 16:22, 16 August 2007 (MEST) ... since learners have

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to receive thousands of reinforcements, something a teacher can do. Presented by Joyce, Weil & Calhoun (2000:333):

Romiszowski (1997:16) as cited by Kristinsdóttir (2001) defined the "core" of Skinner's stimulus-response model as “that learning has occurred when a specific response is elicited by specific situation or stimulus with a high degree of probability. The more likely and predictable the response, the more efficient the learning has been. These attempts to shape human behaviour by presenting a gradual progression of small units of information and related tasks to the learner have been noticed. At each stage the learner must actively participate by performing the set task. He is then immediately supplied with feedback in the form of correct answer”.

The primary purpose of feedback" is to determine whether the communication was successful, in order that corrective steps are taken." (Crowder 2008) Depending upon the complexity of the error committed the program may initiate a remedial sequence of instruction, a practice designed to eliminate the learning deficiency. Branching instruction adapts the sequence of the program to a limited degree to fit the prior learning and processing capabilities of the user. All program options are intrinsic to the program and, therefore, not dependent on any external programming device. This approach is especially adapted to machine presentation, which provides for greater levels of adaptability. Branching texts tend to be large and confusing, especially when users try to access them in a manual way.

The primary difference between Skinner's conception of programming and Crowder's is in the function of the response. To Skinner, learning results from making the correct response. Contrary to this response orientation, Crowder believed that learning results from the realignment of the user's knowledge structure, and that the response is simply a means for controlling the program or machine. The larger chunks of information need to be assimilated and integrated with what the user already knows. The response, he believed, tests the level of integration. This type of programming benefits the higher-ability user, who is more capable of higher-level integration of ideas, more than it does the lower-ability user. Portia Diaz-Martin (2001, retrieved 15:56, 14 August 2007 (MEST)).

Use of Instructional Materials

Computer assisted-instruction, filmstrips, remote-access retrieval system and programmed materials such as modules and self-learning kits are media that can be used by the teacher to improve the educative process in this new generation.

Bradford (2001) stressed out that the method of instruction influences the richness of the instructional skills, but this is not enough assurance of an effective educative process. It also requires the use of appropriate instructional materials to facilitate the learning.

According to Dowdeswell (2002), modular approach enables the learning process to be more logically sequenced than the traditional teaching approach. Programmed and modular instruction is found to be effective in teaching and learning. However, Lardizabal commented that in using modules, teachers should bear in mind that these cannot replace them in their functions as facilitator of learning, that she cannot turn into a mere machine and the larger usefulness of these materials and method.

With these advances in technology, distance education was born. Manlulo (2000) cited that a Filipino student has a chance to graduate and get a diploma from a foreign school without actually leaving the country. This is one manifestation that learning can be possible through learning instructions.

Glazar (2002) stressed the parallel nature of independent learning. As a result, it has the potential of producing individuals who are resourceful and self-appraising learners. Self-learning kits or modular instructions therefore are effective milestones in the educative process in this fast changing world.

Furthermore, according to Cruz and Tovera, as a result of these technological advancements and innovations in improving the teaching and learning, the teacher adapts new roles and insights and should not gain from the more traditional programs but capitalize on these changes.

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Instructional Materials

In this age, education has become wide spread and exclusively oral teaching cannot be the key to successful pedagogy. To make the teaching learning interesting the teacher has to use instructional aids. (Nicholls, 2000: Raw, 2003)

Developing Instructional Materials

Romero (2000) constructed an Instructional Handbook in Teaching Technical Drawing. He found out that the topics and activities, which were included in the handbook met the essential criteria and observed to be suitable effective to the learners. The following steps were used: survey phase, creative phase, evaluation phase and the statistical treatment and analysis. He further revealed in his study that the mean of the posttest taken by the students is higher thus the mean of the pretest, an indication that there is a significant difference in the performance of the students.

Rosales (2000) constructed Learning Packets in Teaching Science and Technology III (Chemistry). This study dealt with the designing and constructing learning packets in chemistry for third year high school students. The study aimed at determining whether there is a significant difference in the academic performance of students exposed the learning packets and those which were given the traditional ways of teaching.

Caculitan's (2000) dissertation, A College Resource Book in Earth Science: Its Utilization and Effectiveness, stated that the students' performance before using the resource book was low but after exposing them to the instructional material, he rejected the null hypothesis since the computed T value was higher than the tabular value which means that the performance of the students who used the handbook was better.

In 1999, de los Santos prepared a Sewing Module for the Out of School Youth of Christ the King in Pili Camarines Sur. The main concern of this study was to assess the effectiveness of the sewing modules prepared for the OSY. She hypothesized that a module was necessary to make teaching effective. She found out that the pretest and posttest and have correlation

To gain clearer and tangible insights on the effects of instructional materials to the teaching and learning process, Belleca (1999) conducted a study to assess the instructional materials used in Science and Technology I in the five (5) public high schools in Pili, Division of Camarines Sur during the school year 1997-1998. The findings revealed that there is a great effect on the scholastic performance of the students.

The study of Rempillo (1998) on "Modules in the Least Mastered Skills in Grade IV Mathematics" in Albay Central School, determined the effect of modules as an instructional materials. A pretest and posttest was employed and compared the results to validate the effectiveness of modules. The result of her findings revealed that modules are reliable self-learning material.

Ognita (2005) conducted a study on "College Algebra Workbook: Facilitating and Upgrading the Performance of the respondents was poor in all domains of learning, but when the workbook was used the performance was excellent, thus the workbook facilitate the learning of the students. On the related studies reviewed not one focused on the development of modules for specific topics in International Cuisine. This is the gap that the present study aims to bridge.

State-of-the-Art

Joyce B., Weil M., and Calhoun E., believed that modular or programmed instruction facilitates the learning process because of the arranged and sequenced learning experiences in a module. Greg Kearsley, Kristindoittir, Bradford and Manlulu cited the positive effect of using information technology in teaching. Salandanan, Borabo and Lucido asserted the same effect. Cruz and Tovera favoured the idea of using innovations in teaching. Portia Diaz Martin believed that the type of programming benefits the higher-ability user, who is more capable of higher-level integration of ideas, more than it does the lower-ability user.

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The study conducted by Romero (2000) focused on the development of a handbook in technical drawing and teaching applied chemistry respectively. Handbooks are considered as materials for self-learning instruction. The study is also focused on developing a self-learning instruction material. Similarly, Borromeo (1998) developed instructional modules in food technology; Ognita (2000) developed a work book in College Algebra and assessed the effectiveness in the mastery of skills of college students. The study is similar since its concern is the development and assessment of modules in auto lighting system. However the present study differed in the content, and the school where the modules were tried out and validated. Rosales (2000) developed learning packets in teaching Science and Technology III. The present study adopted the same methodology in conducting the study. Asisten (1998) evaluated the effects of computer-aided instruction while Belleca assessed the use of instructional materials. Both studies found out that using instructional materials in teaching ensure favorable effects in the academic performance of the students.

The study is confined with designing, and evaluating instructional modules in International Cuisine for second year college BSHRM students. Of the related studies reviewed not one focused on the development of modules for specific topics in International Cuisine (Commercial Cooking NC II). This was the gap that the present study aimed to bridge.

Theoretical Framework

Learning can be best achieved through series of learning activities which will provide the learner the necessary experiences needed to acquire, develop and enhance their skills and the self-learning or modular kits contribute much to the learning process. This study was based on the **theory of connectionism or the S-R (Stimulus Response) Bond Theory**. This point of view is based on the concepts that the connections are formed between situations and responses. Modules containing self-learning tips provide sufficient learning experiences for strengthening the bond or establishing habit through practice. The **theory of Behaviorism** was on the strong foundation of the study. The behaviorist believed that the form of conditioning responses and habit formation are mechanically performed through sequence of System and subject will be exposed to self-learning kits regularly; their mind will be conditioned and therefore will acquire the knowledge.

The Social Doctrine of John Dewey which states that learning is an active process was also one of the bases of this study. In modular instruction, the learner is actively involved in self-activity, thus there is an opportunity to react, to do and to understand.

Another theory which becomes a basis for this study is the **Cognitive Theory** where it regards technology as a tool for cognitive organization. In here, students are not concerned with the question “what” rather than the” how”. (Rapatan 2001)

Instructional theory is the basic framework adopted in this study originally used by Alexander Kapp, a German educator in 1833. This is a theory that offers explicit guidance on how to better help people learn & develop. An instructional theory focuses on how to structure material for formatting the educator of human beings. Andragogy was developed into a theory of adult education by the American educator Malcolm Knowles. The word comes from the Greek ἀνδρο (andro-) or “man” [rather than ενήλικ which means "adult”] and άγω (ago) to "lead"; so it literally means, "to lead the man.” Learning strategies focus on mature learning with a mentor that encourages, enables the mature learner by providing access to appropriate resources, and refrains from obtrusive interference.

The views presented in the **Constructivist Learning Theory** suggests that teachers should provide the learners with activities, with hands on learning and with opportunities to experiment and manipulate object, but the interaction is always to make clear to the learner. The structure of the world is independent to the learner. Teachers help the learner understand the world, but do not ask him to construct his own world; hence, the learner needs to be provided with assistance and materials that will help discover how a theory works and what comprises the world. (Urbano 2004).

Moreover, this study adopted the **Bruner’s Theory of Discovery Learning** which involves process of obtaining and assimilating the understanding of new information. In the instructional modules, new

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information in international cuisine is presented for the students to acquire through self-learning activities. The knowledge acquired is utilized through manipulating the trainer which will facilitate in the application of learning.

Finally the self-assessment questions in the modules will measure whether the newly gained information is applied accurately.

Hull's Systematic Behavior Theory is another crutch of this study. This states the connection between the stimuli and response is determined by their relation to drive and reward. Acting upon the individual while he is experiencing these drives are stimuli or neutral impulses, which lead to certain responses. The learning experiences provided in the instructional modules are geared towards providing the needs for effective learning of the Bachelor of Science in Hotel and Restaurant Management students.

In the educative process, the main purpose is to transport learning as effective as possible; hence, teachers who are the learning facilitators should exhaust all ways and means to achieve quality instruction.

Figure 1. The interrelationship of the theories used in the preparation and validation of Instructional Modules in International Cuisine (Commercial Cooking NC II).

Assumptions

1. There are acceptable module designs that can be used as guide in developing a learning module for International Cuisine.

Conceptual Framework

The main purpose of instruction is to develop the students' knowledge, skills and attitude. This can be best attained by using self-learning kits, programmed materials and instructional modules. It is for this reason the

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researcher was motivated to develop and validate instructional modules in International Cuisine (Commercial Cooking NC II).

The inputs considered in this study are the approved syllabus of Mariners, Training Regulations of TESDA, course programs for degree and short term courses were essentially considered to achieve the required competencies.

The module development process involved the following: conceptualizing phase which included designing, wherein the researcher chose the content and coverage of the topics based from the approved syllabus for International Cuisine; writing the modules and evaluation of experts. Initial try-out of the instructional modules and the validation phase were made wherein teacher-experts were tapped to answer the evaluation instrument. The suggestions given were considered in the finalization of the modules. The effectiveness of the instructional modules was measured based from the pretest and posttest results after the researcher conducted the final try- out with the modules to 40 second year Bachelor of Science in Hotel and Restaurant Management students.

The output of the study is the effectiveness of Instructional modules in International Cuisine (Commercial Cooking NC II).

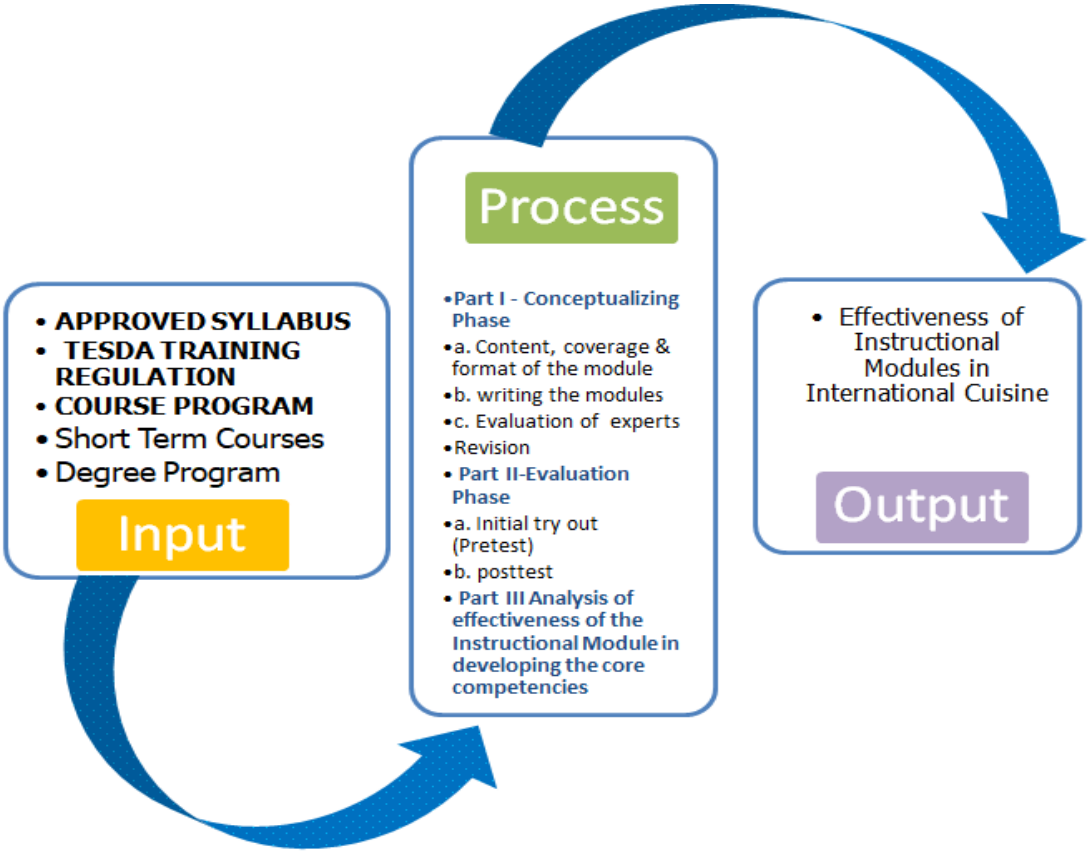

Figure 2.Conceptual Framework of the study.

Statement of Hypothesis

1. There is no difference between experimental and control groups in the knowledge, attitude and skills in terms of

a) pre-test,
b) posttest

2. There is no difference between pretest and posttest scores of experimental class in the knowledge, attitude and skills.
3. There is no difference between pre and posttests scores of control group in the knowledge, attitude and skills.

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Definition of Terms

The following words and phrases were defined operationally as used in the study.

Attitude refers to the affective learning of the students and measured in terms of scores in pre and posttest after using the modules.

Commercial Cooking NC II is a national certification given by TESDA in evaluating the competencies acquired by the students taking the subject International Cuisine.

Course Program refers to the curriculum used in the degree and short term courses offering International Cuisine subjects.

Instructional Modules refers to the self-contained and independent unit of instruction which primarily focused on well-defined objectives. It is the output of the study.

Knowledge refers to the cognitive learning of students and measured in terms of the scores in pre and posttest after using the modules.

Pretest refers to the actual scores of students prior to exposure to the instructional modules.

Posttest refers to the actual scores after exposure to the instructional modules.

Respondents are the students enrolled in the subject International Cuisine.

Skills refer to the psychomotor learning of the students and measured in terms of the scores in pre and posttest after using the modules.

Syllabus refers to the framework of the topics included in the subject International Cuisine.

Training Regulation refers to the competency standard set by Technical Education & Skills Development Authority (TESDA) in conducting teaching-training for students.

METHODOLOGY

This chapter presents the research design, locale, respondents of the study, data gathering procedures, research instruments and the statistical analysis of the data.

The descriptive method of research was used to gather data from the experts. Descriptive method of research describes “what is” and interprets “what is”. It is concerned with conditions of relation that exist; practice that prevail; beliefs, processes that are going on, effects that are being felt or trends that are developing.

In the preparation of the modules, the researcher identified first the different competencies, topics and objectives which need to be carried out based on the approved syllabus, course programs for degree and short term courses and Training Regulations with National Certificate II (NC II) prescribed by Technical Education and Skills Development Authority (TESDA). The module title, lessons and concepts in International Cuisine was presented in Table 1. The initial and final try out was conducted through team teaching strategy in which the enhanced module was used by the class of Ms. Emee DC. Barbara of Mariners Polytechnic Colleges, Naga Campus during the second semester of school year 2012-2013.

Presented in figure 3 is the development framework which shows the flow on how to prepare and validate instructional modules in International Cuisine. This includes the procedure; the researcher collected and used the approved syllabus, course programs and TESDA Training Regulations. Second step, the researcher analyzed and conceptualized the content, coverage and format of modules. Also, writing the modules and Initial try-out and final try-out of modules were included in this phase. The third step used was the evaluation phase where the pretest and posttest was employed and the results were interpreted. Finally, the outputs are the Instructional modules in International Cuisine.

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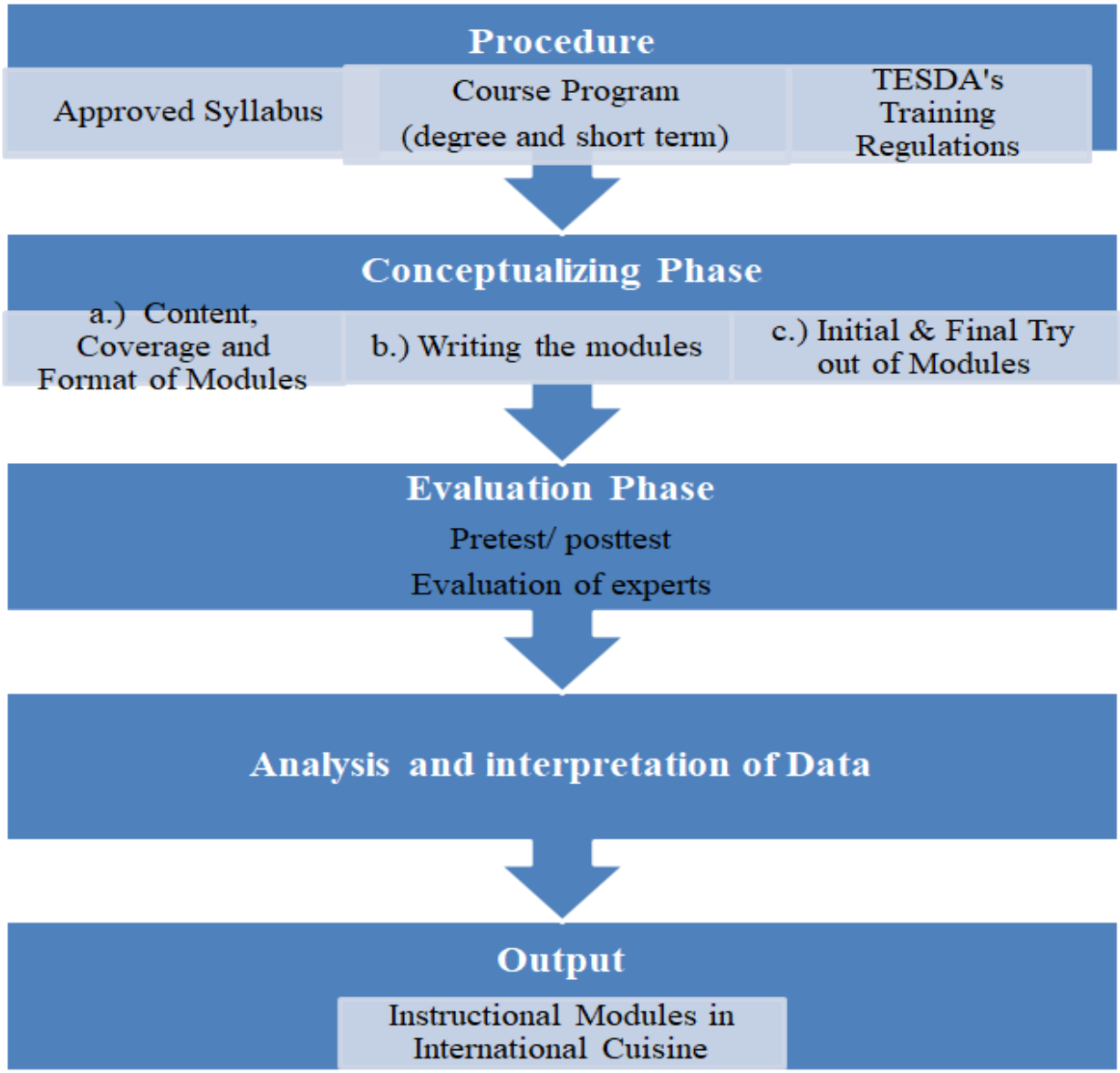

Figure 3. Development Framework of the Study

Steps involved in the preparation of the instructional modules

Teaching and learning situation can best be facilitated if there are adequate instructional materials. With this fact, the researcher came up with the idea of constructing two sets of Instructional Modules in International Cuisine.

The researcher followed the steps in the Research and Development process in the development of the learning modules.

- **Step 1. Literature Review**. This includes review of literatures and studies, classroom observations and interviews.
- **Step 2**. **Planning.** This step includes defining skills, stating objectives, determining course sequence and small-scale feasibility testing. The schedule in writing the modules are presented in Table 2.
- **Step 3. Preliminary Field Test and Product Revision.** The purpose of the preliminary field test is to obtain an initial qualitative evaluation of the modules. It is usually unnecessary to involve a large number of subjects in this initial field test. All data are compiled and analyzed. The results were used to revive the modules and then go on to make the necessary revisions.
- **Step 4.Main Field Test and Product Revision.** The primary purpose of the main field test is to determine whether the modules under development meet the performance objectives. The secondary

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purpose is to collect information that can be used to improve the material in its next revision; therefore, questionnaire and interview data should be obtained from all participants in the main field test.

If the findings of the main field test indicate that the modules fail substantially short of meeting objectives, it is necessary to revise the educational product and conduct another field test.

- **Step 5. Final Revision.** The purpose of the final revision is to determine whether an educational product is fully ready for use in the schools without the presence of the developer or her staff. In order to be fully ready for operational use, the package must be complete and thoroughly tested in every aspect. A final revision of the total course is carried out.

Format of the Module

The format of the instructional module was based on the approved syllabus and Training Regulation prescribed by Technical Education and Skills Development Authority (TESDA). The researcher adopted the format of Lardizabal and Garcia with parts such as title , overview, objectives, instruction to the learners, pretest, learning activities, posttest, and references. However, additional parts were included such as feedback and evaluation and performance test evaluation. They are as follows:

1. **Title.** It should be briefly, comprehensively, and interestingly stated.
2. **Overview.** It gives the students a bird's eye view of the topic being covered by the module. Such background is needed to prepare their mental set-ups and at the same time to motivate them.
3. **Objectives.** Here the students will know exactly what is expected of them in going through the module in terms of learning objectives. To make these objectives clear and comprehensive to them, they should be formulated in terms of student's specific and measurable performance.
4. **Instructions to the Learners.** Since the module is self-contained, students are expected to carry out the suggested activities, answer specific questions accomplish sheet assignments and other related activities by themselves. To enable them to do so, they are to be given instructions which should be stated according to qualities like clarity, brevity, simplicity and specificity.
5. **Pre-test.** This purposely is done to determine how much the learner already knows about the topic. If the results show that how considerable is considerable knowledge, another activity may be given to enhance his mastery of the subject.
6. **Learning Activities.** These are the lessons to be performed by the student-user to determine their capacity in performing the given task using the self-learning material.
7. **Feedback and Evaluation.** To determine whether his answers to the test questions in the pre-test are correct, answer key is referred to as an evaluation feedback. On the other hand, once the total number of correct answer is counted, it must be given an equivalent grade to find out whether the learners passes or fails to the test given. The equivalent grades are contained in the pre-test evaluation table.
8. **Post-test**. After the students has done all the learning activities suggested in the module, he has to take a post-test aimed at finding out how much he has learned from it. Aside from the equally-prepared post-test used earlier may also be given as post-test. An improvement in the test scores of the students is most likely to occur.
9. **Feedback and Evaluation.** The post-test feedback, just like the pre-test feedback serves as the answer key while the post-test evaluation, like the pre-test evaluation provides the equivalent grades of the different score obtained by the students.
10. **Performance Test Feedback and Evaluation.** This determines the criteria of evaluation on the performance obtained by the students and equivalent ratings provided to the necessary skills acquired.

The researcher also used the **ASSURE and ADDIE** model of instructional design which helps organize thoughts and create a product for use in the classroom. The implementation piece of the project will probably not take place until after it has taught the lessons, implemented the performance task, and evaluated the success of the project. These designs help to determine the content characteristic such as title, topics and subtopics based from the training regulation, syllabus and course programs. Instructional characteristics were also identified to determine the overview, activities, exercises, pre-test and posttest, feedback and other assessment tools. And lastly, technical characteristics was given importance in the development of the modules to check

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the format, colors, figures, pictures, font size and style used to make the module more interesting and attractive to the users.

Research Design

The quasi-experimental method using the Two-Group Pre-test and Posttest designs was used in view of the limitations in the size of experimental class and control groups using the modules.

While this design may not suffice to counter all threats to internal validity, the researcher believes that any difference between the pre-test and posttest performance of the students is indicative of the effectiveness of the instructional modules.

Locale

The respondents of this study were the BSHRM students enrolled in International Cuisine.

The study was conducted at MPC, Naga City Campus where the Bachelor of Science in Hotel and Restaurant Management – International Cuisine is offered. MPC is known for its Hospitality programs and linkages where graduates are competent and globally competitive, thus chances of job placement are adequate either local or international.

Respondents of the Study

A total enumeration of 40 students subdivided into two groups was used in the study and composed of 2nd year students of Mariners Polytechnic Colleges. The student respondents were pre and post tested. The result of the pre and posttests was tallied and used for statistical procedure.

Also there are five experts who are handling International Cuisine subjects at Mariners Polytechnic Colleges, Naga City Campus and Abraham Dumlao Colleges of the Philippines Manila were tapped to evaluate the instructional modules.

Table 1. Sample Population of Student Respondents

College Year level	**Male**		**Female**		**Total**	
	n	%	**N**	%	**n**	%
2nd	**18**	45	**22**	55	**40**	100
Total	**18**	45	**22**	55	**40**	100

Data Gathering Procedures

Pre-test and posttest were used as the test instruments relative to the approved NC II Assessment given by Technical Educational Skills and Development Authority (TESDA). A rating scale was used by the researcher to determine the quality of the instructional modules.

The respondents were given pre-test. Using the same evaluation instruments, the same groups of the students were given posttest after using the module.

Research Instruments

Approved syllabus from Mariners, course programs for degree and short term degrees and TESDA's training regulations was used in this study to match the lessons and the competencies to come up with the content of the module.

Another instrument used was the evaluation for experts to validate and enhance the content and the format of the module.

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To implement the initial and final try out, pre-test and post tests were given to the respondents and the researcher used rubrics for the evaluation.

Data Analysis

The following statistical measures were adopted in this study:

Mean percentage and rank was used in determining the distribution of the respondents in the variables covered in the study.

To determine the significant difference of pre-test and posttest for experimental and control groups, t-test for independent samples waSs used. To determine the significant difference for pre-test and posttest of skills and attitude, t-test for correlated samples was used.

$$t = \frac{\times - \times^2}{\sqrt{\frac{s^2}{N^1} + \frac{s^2}{N^2}}}$$

where: $s^2 = \frac{\check{z}x_1^2 - \left[\frac{(\check{z}\times^1)^2}{N^1}\right] + \check{z}\times^{2^2} - \left[\frac{(\check{z}\times^2)^2}{N^2}\right]}{N_1+N_2 - 2}$

and,

$t = \frac{\check{z}D}{\sqrt{\frac{[N\check{z}D^2-(\check{z}D)^2]}{(N-1)}}}$

where: $D = X_1 - X_2$

RESULTS AND DISCUSSION

This chapter presents the content and format on how to prepare and validate the effectiveness of the instructional modules. The results of the evaluation of experts are also presented in this chapter. Succeeding discussions will show the results of the differences of pretest and post test scores of the experimental and controlled classes in terms of knowledge, attitude and skills.

Identification of Contents of the Instructional Modules for International Cuisine based on the approved syllabus and TESDA Training Regulations

To come up with the final content of the modules, the competencies to be developed and lessons to be taught were identified, validated and matched. The bases for such include the International Cuisine syllabus of Mariners, Center for Culinary Arts course programs for degree and short term courses, and also the TESDA training regulation. Results are shown in Table 2.

By identifying the competencies in the training regulations provided by TESDA, comparison and matching of lessons in the course programs and the approved syllabus was given emphasis. Selected topics were included in the content of the instructional modules in International Cuisine.

Where in, TESDA TR includes the following competencies, Clean and maintain kitchen premises, organize and prepare food, select, prepare and cook meat, prepare, vegetables, fruits, eggs and starch products, prepare and cook poultry and game, prepare, stocks, sauces and soups, prepare, cook and serve food for menus, prepare appetizers and salads and prepare sandwiches. While comparing to the syllabus provided by Mariners the following topics was given emphasis, organize and prepare food, kitchen organization and layout, tools, equipment and its uses, assembling and preparing ingredients, assembling and preparing dairy, dry goods, fruit and beverage, preparing meat, seafood and poultry, meal management, food quality factors to consider in meal

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management and menu planning, menu patterns and sample menu, mechanics of menu planning, recipe construction, food purchasing, food sanitation and safety, nutritional quality and special dietary factors, basic preparation of stocks, soups and sauces with selected international menus. And for the course programs provided by Center for Culinary Arts the following topics were given importance such as, core cooking methods (dry and moist heat methods), preparation of contemporary dessert and kitchen fundamentals.

Table 2. Matching of lessons for inclusion in the instructional modules in International Cuisine with TESDA training regulations and IC syllabus

TESDA Training Regulation NC II	**IC Syllabus (Mariners)**	**Course Program (Center for Culinary Arts)**	
		Degree Program	Short term
Clean and maintain kitchen premises Organize and prepare food Select, prepare and cook meat Prepare vegetables, fruits, eggs and starch products Prepare and cook poultry and game Prepare stocks, sauces and soups Prepare, cook and serve food for menus Prepare appetizers and salads Prepare sandwiches	Overview: Organize and prepare food, Kitchen organization and layout Tools, equipment and its uses Assembling and preparing ingredients Assembling and preparing dairy, dry goods, fruit and beverage Preparing Meat, seafood and poultry Meal Management: An Overview Food Quality factors to consider in meal management and menu planning Menu patterns and sample menus Mechanics of menu planning Recipe Construction Food purchasing Nutritional quality and special dietary factors Basic preparation of stocks, soups and sauces with selected international menus	**Course 1: Core Cooking Methods — Dry Heat** Sautéing proteins, starches and vegetables Pan-frying proteins, starches and vegetables Deep-frying proteins, starches and vegetables Grilling proteins, starches and vegetables Roasting proteins, starches and vegetables **Course 2: Core Cooking Methods — Moist Heat** Braising proteins and vegetables Stewing proteins, starches and vegetables Shallow poaching proteins Steaming proteins and vegetables Deep poaching proteins and vegetables **Course 3: Contemporary Desserts** Chocolate Tempering Confections Petits Fours Cakes Plated desserts	**Kitchen Fundamentals** Knife skills Fabrication Food Safety and Sanitation Palate development and Ingredient pairing Product Identification Culinary Math Grand Sauces Compound Sauces Emulsified Sauces Contemporary Sauces Consommé Vegetable-based Soups Reductions Roux-based Soups and Bisques **Grains and Vegetables** Gratins Soufflés Timbales Pilafs Risotti Legume salads Grain salads

Table 3 presents the content of instructional modules in International Cuisine where it is composed of two modules namely (1) Organizing, Menu Planning and Costing with the following competencies; clean and maintain kitchen premises, organize and prepare food, select, prepare and cook meat; (2) Recipe Preparation which include the following competencies; prepare vegetables, fruits, eggs and star products, prepare and cook poultry and game, prepare stocks, sauces and soups, prepare, cook and serve food for menus, prepare appetizers and salads and prepare sandwiches.

Ninety eight (98%) percent of the lessons being included in the modules were taken from the competency requirements provided in the TESDA training regulation such as kitchen organization and lay-out, tools, equipment and its uses, assembling and preparing ingredients for menu items, preparing and planning menu. For module 2, the following lessons were selected; preparing dairy, dry goods, fruits and beverages, preparing meat, seafood and poultry, and, preparing stocks, sauces and soups.

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Table 3. Contents of the International Cuisine Module

Module	Competencies	Lesson
1. Organizing, Menu Planning and Costing	Clean and maintain kitchen premises Organize and prepare food Select, prepare and cook meat	Kitchen organization and lay-out, Tools, equipment and its uses, Assembling and preparing ingredients for menu items Preparing and planning Menu
2. Recipe Preparation	Prepare vegetables, fruits, eggs and starch products Prepare and cook poultry and game Prepare stocks, sauces and soups Prepare cook and serve food for menus Prepare appetizers and salads Prepare sandwiches	Preparing dairy, dry goods, fruits and beverages Preparing Meat, Seafood and Poultry Preparing stocks, soup and sauces, Preparing hot and cold dessert

Strength and Weaknesses of the Modules as Assessed by Experts in International Cuisine

To determine that the modules are truly useful, the researcher asked the expertise of some instructors handling the subject International Cuisine to evaluate and verify each part of the prepared modules in terms of its suitability and appropriateness for developing the desired competencies.

On the Title of the module, findings showed that 100% of the evaluators rated the title as excellent with a weighted mean of 4. This implies that the title is brief and interesting.

The Overview of the module was also rated excellent by the evaluators with a weighted mean of 4. They all agreed that the overview gave the students a bird's eye view of the topic being covered by the module. Such background is needed to prepare their mental set-up for the course and also motivates them.

The objectives of the module received a very satisfactory rating with a weighted mean of 3.4. The lower rating given by the experts could be explained by their remarks that the objectives should be formulated in terms of student's specific and measurable performance.

On the Instruction to Learners, the criteria require that it must be interactive and self-contained. The experts gave a rating of 90% excellent with a weighted mean of 3.8. Since the module is envisioned as interactive and self-contained, students are expected to carry out the suggested activities, answer specific questions, and accomplish other activities by themselves. These are supplied by the module since it contain clear instructions to the learner

On the pre-test and posttest part of the module, the experts gave a rating of 90% or excellent with a weighted mean of 3.8. On this criteria, the experts agreed that this is one of the components of the module which is purposely given to measure the capability of the learner to understand the contents of the module and to develop the desired knowledge, attitude and skills from the course.

On the Learning activities outlined in the module, it received a very satisfactory rating of 80% with a weighted mean of 3.4. This is because the evaluators believed that it will help them to measure the skills and attitude of the learners towards the performance of the given task, which may not have been supplied fully well by the module.

On feedback and evaluation, the module received a rating of 100% or excellent with a weighted mean of 4. This is because the evaluators agreed that the module provided the criteria for evaluating the performance obtained by the students and there are equivalent ratings provided to the skills acquired.

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Table 4 shows that most of the parts of the module were acceptable and received an excellent rating. Most of the experts believed that the instructional modules are very helpful to facilitate the learning of the students. Also they have agreed that the modules can serve as useful guide to the students to accomplish the activities in accordance to the given objectives of the International Cuisine course. Areas that are deemed weak are the Objectives and the Learning Activities which only get a rating of 3.4 or very satisfactory rating.

Table 4. Results of the evaluation by the experts on strengths and weaknesses of the Instructional Modules in International Cuisine

Parts of the Modules	Weighted Mean	Adjectival Rating
Title	4	Excellent
Overview	4	Excellent
Objectives	3.4	Very Satisfactory
Instruction to the Learners	3.8	Excellent
Pre-test/Posttest	3.8	Excellent
Learning Activities	3.4	Very Satisfactory
Feedback and Evaluation	4	Excellent
Performance Test Evaluation	4	Excellent

Scores: 3.41 – 4 – Excellent, 2.6 – 3.4 – Very Satisfactory, 1.7 – 2.59 – Good, 1.0-1.69 - Poor

Assessment of the Performance of Students in the Pre-Test and Posttest in the Required Knowledge, Skills and Attitude in International Cuisine

Differences in Pre-test and Posttest Scores of the experimental and control groups

The researcher made use of the pre-test and posttest as the primary tools to determine the effectiveness of the instructional modules in the performance of the student-users. There were 40 students that were divided into control and experimental groups involved in the study using the pretest and posttest as evaluation instruments.

To determine the effectiveness of the instructional modules, the pre-test and post test scores were computed. The researcher with the aid of s a statistical software, computed the mean and the standard deviation of the pre-test and post test scores as shown in Tables 5 and 6.

Table 5 presents the mean scores, computed t and performance level between experimental and control groups for pre-tests along the knowledge, attitude and skills. For module 1, the knowledge mean scores of 0.55 and 0.59, for the experimental and control groups respectively, were generated with fair performance level, computed t was -.246, is not significant at .001. Attitude means scores were 2.31 and 2.27, for the experimental and control groups respectively, with computed t of .536, is not significant at .001 with fair performance level. For skills, mean scores of 2.36 and 2.31 were obtained for the experimental and control groups respectively, with fair level of performance, with computed t of 2.07. Since t value is greater than the stable value at .001, the null hypothesis is rejected. It means that there is a significant difference between the pretest scores of the two groups in the skill's domain.

For module 2, the knowledge mean score for experimental is 1.72 and mean score of the control group is 1.87 indicating a need for improvement performance. For the attitude, the mean score for experimental is 2.34 and in the control group mean score is 2.35 were generated indicating a fair level of performance.

Skills mean scores of 2.95 for the experimental group with increased moderate extent level of performance and 2.42 for the control group with fair level of performance for both experimental and control classes. With computed t of 8.46, significant at .001, the null hypothesis is rejected. It means that there was a significant difference between the pretest scores along skills for the two groups.

Aside from the skills for module 2, findings imply that the students have equivalent level of knowledge and attitude on the topics prior to their exposure to the instructional modules.

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Table 5. Mean Scores, computed - t and performance level (PL)between Experimental and Control Groups along Knowledge, Attitude and Skills in the Pre-test

Module No.	Group	Knowledge			Attitude			Skills		
		Mean	Computed t	PL	Mean	computed t	PL	Mean	computed t	PL
Module 1	Experimental	0.55	-.246 ns	F	2.31	.536 ns	F	2.36	2.07	F
	Control	0.59		F	2.27		F	2.31		F
Module 2	Experimental	1.72	-1.115 ns	F	2.34	-.131 ns	F	2.95	8.46**	ME
	Control	1.87		NI	2.35		F	2.42		F

Legend: ** Highly significant ns- not significant

4.22 – 5.0 increased to a Very Great Extent (VGE)

3.42 – 4.21 increased to a Great Extent (GE)

2.62 – 3.41 increased to a Moderate Extent (ME)

1.81 – 2.61 F (Fair)

1.0 – 1.80 NI (Needs Improvement)

Using the **t- test for independent samples**, the obtained means of the pre-test and post test scores of the control group were computed. From table 6 shows that the computed t for module 1 along with knowledge is 38.16; attitude is 15.35, and skills is 42.95, all significant at .001. These are all greater than critical t value of 3.88, df= 19, which is significant at .001. Therefore the null hypothesis is rejected. This implies that there is a highly significant difference between pre-test and post test scores of the control group for module 1.

While the result obtained from module 2 using the **t- test for independent samples**, the obtained means of the pre-test and post test scores of the control group were computed. From the table 6, computed t for control group along knowledge is 21.06, attitude is 14.70 and skills is 30.98. These are all greater than critical t value of 3.88, df= 19, which are highly significant at .001. Therefore the null hypothesis is rejected. Findings imply that there is a highly significant difference between pre-test and post test scores of the control group for module 2.

Table 6. Computed t, mean and significance level of Scores between Pre-tests and Posttests along Knowledge, Attitude and Skills of the **Control Group**

Module No.	Group	Knowledge			Attitude			Skills		
		Mean	computed t	Sig	Mean	computed t	Sig	Mean	computed t	Sig
Module 1	**Pre-test**	0.58	38.16**	.001	2.27	15.35**	.001	2.31	42.95**	.001
	Posttest	4.80			3.77			3.82		
Module 2	**Pretest**	1.87	21.06**	.001	2.36	14.70**	.001	2.42	30.98**	
	Posttest	3.68			4.06			3.86		.001

** Highly Significant

Using the **t- test for independent samples**, the significance of the difference in the obtained means of the pre-test and post test scores of the experimental group were computed against the set significance level of 0.05. From table 6A, computed t for module 1 along with knowledge is 38.06; attitude is 26.93, and skills is 47.89, all significant at .001. These are all greater than critical t value of 3.88, df= 19, significant at .001. Therefore the null hypothesis is rejected. There is a highly significant difference between pre-test and post test scores of the experimental group for module 1.

While the result obtained from module 2 using the **t- test for independent samples**, the obtained means of the pre test and post test scores of the control group were computed. From the table 6A, computed t for

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experimental group along with the knowledge is 29.61, attitude is 32.66 and skills is 30.32 are significant at .001. These are all greater than critical t value of 1.73, df= 19, significant at .001. Therefore the null hypothesis is rejected. Hence, there is a highly significant difference between pre-test and post test scores of the experimental group for module 2.

Table 6A. Computed t, mean and significance level of Scores between Pre-tests and Posttests along Knowledge, Attitude and Skills of the **Experimental Group**

Module No.	**Group**	**Knowledge**			**Attitude**			**Skills**		
		Mean	comp t	Sig	Mean	comp t	Sig	Mean	Comp t	Sig
Module 1	**Pre-test**	0.55	38.06**	.001	2.31	26.93**	.001	2.36	47.89**	.001
	Posttest	4.98			4.63			4.68		
Module 2	**Pretest**	1.73	29.61**	.001	2.34	32.66**	.001	2.95	30.32**	.001
	Posttest	5.00			4.70			4.53		

** Highly Significant

For module 1, table 7 shows that the mean score for knowledge of control group is 4.8 while mean score of experimental group is 4.98 indicating that the knowledge increased to a very great extent. The computed t-value is 3.79, significant at .001. This is greater than the critical t value of 3.56, df=38, at.001 significance level, therefore the null hypothesis is rejected. This means that there is a significant difference between the experimental and control groups in terms of knowledge. Those in the experimental group got higher scores than the students in the control group.

The mean score for attitude of control group is 3.77 has increased to a great extent while mean score of the experimental group is 4.63 indicating an increase to a very great extent. The computed t-value is 7.94, significant at .001.This is greater than the critical t value of 3.56, df=38, significance level=.001, therefore the null hypothesis is rejected. This means that there is a highly significant difference in the posttest scores between the experimental and control groups for attitude. It was observed that there was greater improvement in the attitude scores of students in the experimental group.

For skills, mean score of control group is 3.81 has increased to a great extent while mean score of the experimental class is 4.68 indicating improvement to a very great extent level of performance. The computed t-value is 14.93 which are significant at .001. This is greater than the critical t value of 3.56, df=38, therefore the null hypothesis is rejected. This means that there is a significant difference in the scores of the experimental and control groups in terms of skills. The experimental group performed better in their skills tests compared to the control group.

For module 2, the table shows that the mean score for knowledge of control group is 3.68 indicating a great extent increase in knowledge scores while mean score of experimental group is 5.00 indicating that knowledge scores were increased to a very great extent. The computed t-value is 55.14, which is greater than the critical t value of 3.56, df=38, at .001 significance level, therefore the null hypothesis is rejected. This means that there is a highly significant difference between the experimental and control groups in terms of knowledge scores.

For attitude, mean score of control group is 4.06 indicating an increase to a great extent while mean score of experimental class 4.70 indicating that the knowledge scores were increased to very great extent. The computed t-value is 5.58, which is greater than the critical value of 3.56. df=38, at .001 significance level, therefore the null hypothesis is rejected. This means that there is a highly significant difference between the experimental and control groups in terms of attitude.

For skills, the mean score of control group is 3.86 indicating increase to a great extent while mean score of experimental class is 4.53 which means that the increase in score was to very great extent. The computed t-value is 11.53, which is greater than the critical t value of 3.56, df=38, at .001 level of significance, therefore

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the null hypothesis is rejected. This means that there is a highly significant difference between the experimental and control groups in terms of scores in the skills test.

Table 7. Mean Scores, computed t and performance level (PL) between Experimental and Control Groups along Knowledge, Attitude and Skills in the Posttest

Module No.	Group	Knowledge			Attitude			Skills		
		Mean	comp t	PL	Mean	Comp t	PL	Mean	Comp t	PL
Module 1	Experimental	4.98	3.79**	VGE	4.63	7.94**	VGE	4.68	14.93**	VGE
	Control	4.80		VGE	3.77		GE	3.81		GE
Module 2	Experimental	5.00	55.14**	VGE	4.70	5.58**	VGE	4.53	11.53**	VGE
	Control	3.68		GE	4.06		GE	3.86		GE

Legend: 4.22 – 5.0 increased to a Very Great Extent (VGE)

3.42 – 4.21 increased to a Great Extent (GE)

2.62 – 3.41 increased to a Moderate Extent (ME)

1.81 – 2.61 F (Fair)

1.0 – 1.80 NI (Needs Improvement)

** Highly significant

Table 8 presents the comparison on student's performance based from the results of pre-test and posttest scores of the experimental and control groups for modules 1 & 2 along with the knowledge, attitude and skills.

For module 1, in the experimental group knowledge pre-test mean score is 0.55 while in the control group is 0.59 and the computed t value is -0.25, significant at 0.81. Attitude pre-test mean score for the experimental group is 2.31 while in the control group is 2.27 and the computed value is 0.536, significant at 0.595. For the skills pre-test mean score in the experimental group is 2.37 while in the control group is 2.31 and the computed t value is 2.01 significant at 0.052. Since significant levels all exceed 0.001, this means that there are no significant differences between compared scores.

Comparing to the posttest mean scores of module 1 in terms of knowledge of the experimental group which is 4.98 while in the control group is 4.80 and the computed t value is 3.79, significant at 0.001. Attitude posttest mean score for experimental group is 4.63 while in the control group is 3.77 and the computed t value is 7.94, which is significant at 0.001. Skills posttest mean score for experimental group is 4.68 while in the control group is 3.82 and the computed t value is 14.93 which is significant at 0.001. This is greater than the critical value of 3.56, df=38, at .001 significance level, therefore the null hypothesis is rejected. This means that there is a significant difference in terms of knowledge, attitude and skills between the experimental and control groups' performance for Module 1.

For module 2, the pre-test mean score for knowledge of the experimental group is 1.73 while in the control group is 1.87 and the computed t is -1.12, significant at 0.272. Attitude pre-test mean score of the experimental group is 2.34 while in the control group is 2.35 and the computed t value is -0.13, significant at 0.897. This means that there was no significant difference between the pretest scores of the two groups in terms of knowledge and attitude. On the other hand, the skills pre-test mean score of the experimental group is 2.96 while in the control group is 2.42 and the computed t value is 8.46 which is highly significant at 0.001.

Comparing to the posttest mean scores of module 2 in terms of knowledge of the experimental group which is 5.00 while in the control group is 3.68 and the computed t value is 55.14 which is highly significant at 0.001. Attitude posttest mean score for experimental group is 4.70 while in the control group is 4.06 and the computed t value is 5.58 which is highly significant at 0.001. Skills posttest mean score for experimental group is 4.53 while in the control group is 3.86 and the computed t value is 11.53 which is highly significant at 0.001.

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This is greater than the critical value of 3.56, df=38, at .001 significance level, therefore the null hypothesis is rejected. This means that there is a significant difference in terms of knowledge, attitude and skills of the experimental and control groups for Module 2.

Findings shows that through the series of tests given to the student-respondents, it was found that there is a significant difference in the pre-test and posttest of control and experimental groups which was a clear indication of a much improved performance of the students after exposing to the instructional modules. The instructional modules are effective tools in teaching and an acceptable mode of facilitating self-learning kit in International Cuisine.

Table 8. Comparison on student's performance based from the results of Pre-test and Posttest scores of the experimental and control groups for Module 1 and Module 2 in terms of knowledge, attitude and skills

Module No.			**Knowledge**				**Attitude**				**Skills**			
Module 1	**Groups**	**Test**	Mean	Com t	Sig		Mean	Com t	sig		Mean	Com t	sig	
	Experimental	Pre-test	0.55	-0.25	0.807	ns	2.31	.536	.595	ns	2.37	2.01	0.052	ns
	Control		0.59				2.27				2.31			
	Experimental	Posttest	4.98	3.79	0.001	s	4.63	7.94	0.001	s	4.68	14.93	0.001	s
	Control		4.80				3.77				3.82			
Module 2	Experimental	Pre-test	1.73	-1.12	0.272	ns	2.34	-0.13	0.897	ns	2.96	8.46	0.001	s
	Control		1.87				2.35				2.42			
	Experimental	Posttest	5.00	55.14	0.001	s	4.70	5.58	0.001	s	4.53	11.53	0.001	s
	Control		3.68				4.06				3.86			

Legend: ns - not significant

s - significant

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of findings, drawn conclusions and recommendations of this study.

Summary

This study aimed to develop instructional modules in International Cuisine Specifically, it answered the following problems: (1) What should be the content of the Instructional Module for International Cuisine based on the approved syllabus and TESDA training regulations? (2) What are the strengths and weaknesses of the modules as assessed by the experts in International Cuisine and how will it be improved? (3) What is the performance of students in the control and experimental classes in the pre-test and post-test in terms of knowledge, attitude and skills? (4) Are there significant differences in the performance of the students?

The research used the quasi-experimental method of research using two- group Pre-test and Posttest Designs to test the effectiveness of the instructional modules. The research made use of 40 student-respondents to assess the significance of using the instructional modules.

Findings

The following are the findings of the study:

1. To come up with the final content of the modules, competency and lessons was identified, validated and matched based on the International Cuisine syllabus of Mariners, Center for Culinary Arts course programs for degree and short term courses and also the TESDA training regulation was used.

The content of instructional modules in International Cuisine where it is composed of two modules namely 1) Organizing, Menu Planning and Costing with the following competencies; clean and maintain kitchen

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premises, organize and prepare food, select, prepare and cook meat. 2) Recipe Preparation which include the following competencies; prepare vegetables, fruits, eggs and star products, prepare and cook poultry and game, prepare stocks, sauces and soups, prepare, cook and serve food for menus, prepare appetizers and salads and prepare sandwiches.

Ninety eight percent (98%) of the lessons being included in the modules were taken from the competency provided in the TESDA training regulation such as kitchen organization and lay-out, tools, equipment and its uses, assembling and preparing ingredients for menu items preparing and planning menu. For module 2, the following lessons were selected; preparing dairy, dry goods, fruits and beverages, preparing meat, seafood and poultry, and, preparing stocks, sauces and soups.

2. To determine that the modules are truly useful, the researcher asked the expertise of some instructors handling the subject International Cuisine to evaluate and verify each part of the prepared modules in terms of its suitability and appropriateness for developing the desired competencies.

On the Title of the module, findings showed that 100% of the evaluators rated the title as excellent with a weighted mean of 4. This implies that the title is brief and interesting.

The Overview of the module was also rated excellent by the evaluators with a weighted mean of 4. They all agreed that the overview gave the students a bird's eye view of the topic being covered by the module. Such background is needed to prepare their mental set-up for the course and also motivates them.

The objectives of the module received a very satisfactory rating with a weighted mean of 3.4.The lower rating given by the experts could be explained by their remarks that the objectives should be formulated in terms of student's specific and measurable performance.

On the Instruction to Learners, the criteria require that it must be interactive and self-contained. The experts gave a rating of 90% excellent with a weighted mean of 3.8. Since the module is envisioned as interactive and self-contained, students are expected to carry out the suggested activities, answer specific questions, and accomplish other activities by themselves. These are supplied by the module since it contain clear instructions to the learner

On the pre-test and posttest part of the module, the experts gave a rating of 90% or excellent with a weighted mean of 3.8. On this criteria, the experts agreed that this is one of the components of the module which is purposely given to measure the capability of the learner to understand the contents of the module and to develop the desired knowledge, attitude and skills from the course.

On the Learning activities outlined in the module, it received a very satisfactory rating of 80% with a weighted mean of 3.4. This is because the evaluators believed that it will help them to measure the skills and attitude of the learners towards the performance of the given task, which may not have been supplied fully well by the module.

On feedback and evaluation, the module received a rating of 100% or excellent with a weighted mean of 4. This is because the evaluators agreed that the module provided the criteria for evaluating the performance obtained by the students and there are equivalent ratings provided to the skills acquired.

3. To determine the effectiveness of the instructional modules, the pre-test and post test scores were computed.

Using the **t- test for independent samples**, the obtained means of the pre-test and post test scores of the control group were computed. From table 6 shows that the computed t for module 1 along with knowledge is 38.16; attitude is 15.35, and skills is 42.95, all significant at .001. These are all greater than critical t value of 3.88, df= 19, which is significant at .001. Therefore the null hypothesis is rejected. This implies that there is a highly significant difference between pre-test and post test scores of the control group for module 1.

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While the result obtained from module 2 using the **t- test for independent samples**, the obtained means of the pre-test and post test scores of the control group were computed. From the table 6, computed t for control group along knowledge is 21.06, attitude is 14.70 and skills is 30.98. These are all greater than critical t value of 3.88, df= 19, which are highly significant at .001. Therefore the null hypothesis is rejected. Findings imply that here is a highly significant difference between pre-test and post test scores of the control group for module 2.

Using the **t- test for independent samples**, the significance of the difference In the obtained means of the pre-test and post test scores of the experimental group were computed against the set significance level of .001. From table 6A, computed t for module 1 along with knowledge is 38.06; attitude is 26.93, and skills is 47.89, all significant at .001. These are all greater than critical t value of 3.88, df= 19, significant at .001. Therefore the null hypothesis is rejected. There is a highly significant difference between pre-test and post test scores of the experimental group for module 1.

While the result obtained from module 2 using the **t- test for independent samples**, the obtained means of the pre test and post test scores of the control group were computed in the set significance level of .001. From the table 6A, computed t for experimental group along with the knowledge is 29.61, attitude is 32.66 and skills is 30.32 are significant at .001. These are all greater than critical t value of 1.73, df= 19, significant at .001. Therefore the null hypothesis is rejected. Hence, there is a highly significant difference between pre-test and post test scores of the experimental group for module 2.

4. Learning can be best achieved through series of learning activities which will provide the learner the necessary experiences needed to acquire, develop and enhance their skills and the self-learning or modular kits contribute much to the learning process.

The comparison on student's performance based from the results of pre-test and posttest scores of the experimental and control groups for modules 1 & 2 along with the knowledge, attitude and skills is very evident of a much improved learning through the use of instructional modules.

For module 1, in the experimental group knowledge pre-test mean score is 0.55 while in the control group is 0.59 and the computed t value is -0.25, significant at 0.81. Attitude pre-test mean score for the experimental group is 2.31 while in the control group is 2.27 and the computed value is 0.536, significant at 0.595. For the skills pre-test mean score in the experimental group is 2.37 while in the control group is 2.31 and the computed t value is 2.01 significant at 0.052. Since significant levels all exceed 0.001, this means that there are no significant differences between compared scores.

Comparing to the posttest mean scores of module 1 in terms of knowledge of the experimental group which is 4.98 while in the control group is 4.80 and the computed t value is 3.79, significant at 0.001. Attitude posttest mean score for experimental group is 4.63 while in the control group is 3.77 and the computed t value is 7.94, which is significant at 0.001. Skills posttest mean score for experimental group is 4.68 while in the control group is 3.82 and the computed t value is 14.93 which is significant at 0.001. This is greater than the critical value of 3.56, df=38, at .001 significance level, therefore the null hypothesis is rejected. This means that there is a significant difference in terms of knowledge, attitude and skills between the experimental and control groups' performance for Module 1.

For module 2, the pre-test mean score for knowledge of the experimental group is 1.73 while in the control group is 1.87 and the computed t is -1.12, significant at 0.272. Attitude pre-test mean score of the experimental group is 2.34 while in the control group is 2.35 and the computed t value is -0.13, significant at 0.897. This means that there was no significant difference between the pretest scores of the two groups in terms of knowledge and attitude. On the other hand, the skills pre-test mean score of the experimental group is 2.96 while in the control group is 2.42 and the computed t value is 8.46 which is highly significant at 0.001.

In comparison to the results of the posttest mean scores of module 2 in terms of knowledge of the experimental group which is 5.00 while in the control group is 3.68 and the computed t value is 55.14 which is highly significant at 0.001. Attitude posttest mean score for experimental group is 4.70 while in the control group is

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4.06 and the computed t value is 5.58 which is highly significant at 0.001. Skills posttest mean score for experimental group is 4.53 while in the control group is 3.86 and the computed t value is 11.53 which is highly significant at 0.001. This is greater than the critical value of 3.56, df=38, at .001 significance level, therefore the null hypothesis is rejected. This means that there is a significant difference in terms of knowledge, attitude and skills of the experimental and control groups for Module 2.

Findings shows that through the series of tests given to the student-respondents, it was found that there is a significant difference in the pre-test and posttest of control and experimental groups which was a clear indication of a much improved performance of the students after exposing to the instructional modules. The instructional modules are effective tools in teaching and an acceptable mode of facilitating self-learning kit in International Cuisine.

Conclusions

1. The content of the instructional modules was based from the approved syllabus of Mariners Polytechnic Colleges, course programs of Center for Culinary Arts and Training Regulation on Commercial Cooking NC II. Its format contained a Title, Overview, Objectives, Instruction to the Learners, Pre-test, Theories, Self-Check/Application, and Posttest. Also ASSURE and ADDIE instructional module designs were adopted in this study, therefore the said model designs provide more help in developing and conceptualizing the content of the instructional modules.
2. The experts rated the instructional modules as acceptable and useful. Most of them believed that the instructional modules are very helpful to facilitate the learning of the students. Also they have agreed that it will provide as guide to the students to accomplish the activities in accordance to the given objectives. They also believed that one of the stemming new methods in teaching and learning today is the modular approach wherein teacher intervention is very minimal and limited. Therefore it shows that most of the parts of the module were acceptable and received an excellent rating. Somehow, Areas that are deemed weak are the Objectives and the Learning Activities which only get a rating of 3.4 or very satisfactory which need to be improved.
3. It is therefore evident that there was an improvement in the performance of the students along with the knowledge, skills and attitude after the exposure to the instructional modules.
4. The result of the tests conducted to the students' shows that there isa significant difference in the pre-test and posttest of the control and experimental classes which has a clear indication of a much improved performance of the students after exposing to the instructional modules.

Recommendations

Based on the conclusions, the following are hereby recommended:

1. To further improve teaching-learning process, instructors should be encouraged to develop their own programmed instruction such as instructional modules related to their field of specialization to strengthen the capabilities of the students to be equipped with necessary skills for self-development and global competitiveness.
2. In order to make teaching learning process more effective, following recommendations may be followed. (a) every activity teacher does undertake need to be carefully planned, (b) familiarize himself with the instructional material used in the class, (c) illustrate the teaching by examples from the daily routine experiences of the students, (d) use audiovisual aids properly, (3) teacher should demonstrate before the whole class and (f) every new concept maybe explained with help of instructional aid.
3. The teachers who will be handling the same subject under the same competency shall develop a more interactive instructional material.
4. The teacher shall also adapt new trends and insights in developing another set of instructional modules.

Recommendations for further Study

To further improve teaching-learning process, instructors should be encouraged to design and develop their own instructional modules which are more interactive to strengthen the capabilities of the students gain the required competencies and develop right attitude towards work.

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APPENDIX

Appendix A

Central Bicol State University of Agriculture

Graduate School

Developing Instructional Modules

in International Cuisine

Dear Faculty,

Greetings!

A study is conducted to help acquire information on developing and validation of Instructional Modules in International Cuisine. Through with your views, opinions and insights, you can contribute to the purpose of reviewing the parts of the instructional modules in International Cuisine. This will take a little of your time.

Please help the researcher to come up with a highly comprehensive and interactive Instructional Modules.

Thank you.

Sincerely,

JEROME H. BALDEMORO, Researcher

Evaluation of Expert *Instructional Modules for International Cuisine*				
Parts of Modules	**Strength**	**Remarks**	**Weakness**	**Suggestions for Improvement**
1. Title. It should be briefly, comprehensively, and interestingly stated.				
2. Overview It gives the students a bird's eye view of the topic being covered by the module. Such background is needed to prepare their mental set-ups and at the same time to motivate them.				
3. Objectives. There must be stated showing what is expected of student in going through the module in terms of learning objectives. To make these objectives clear and comprehensive to them, they should be formulated in terms of student's specific and measurable performance.				
4. Instruction to the learners Since the module is envisioned as inter-active, self-contained, students are expected to carry out the suggested activities, answer specific questions accomplish sheet assignments and other related activities by themselves. To enable them to do so, they are to be given instructions which should be stated according to qualities like clarity, brevity, simplicity and specificity.				

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5. Pre-test One important component of a module is the pre-test which is purposely given to determine how much the learner already knows about the topic. If the results show that he has considerable knowledge about it, he may be given the next module.				
6. Learning activities These are the lessons to be performed by the student-user to determine their capacity in performing the given task using the self-learning material.				
7. Feedback and Evaluation To determine whether the student answers to the test questions in the pre-test are correct, answer key is referred to as an evaluation feedback. On the other hand, once the total number of correct answer is counted, it must be given an equivalent grade to find out whether the learners passes or fails to the test given. The equivalent grades are contained in the pre-test evaluation table.				
8. Post Test After the students has done all the learning activities suggested in the module, he has to take a post-test aimed at finding out how much he has learned from it. Aside from the equally-prepared post-test used earlier may also be given as post-test. An improvement in the test scores of the students is most likely to occur.				
9. Feedback and evaluation The post-test feedback, just like the pre-test feedback serves as the answer key while the post-test evaluation, like the pre-test evaluation provides the equivalent grades of the different score obtained by the students.				
10. Performance test feedback evaluation This determines the criteria of evaluation on the performance obtained by the students and equivalent ratings provided to the necessary skills acquired.				

Appendix B

Instructional Modules in International Cuisine

Attitude Test

Name: _____Year/sec:_____ Date _____Score_____

CLEANLINESS AND ORDERLINESS	Highly Agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Highly Disagree (1)	Score
In observing the cleanliness you have to properly identify the: Tools equipment In preparing tools and equipment you have to observe the following before and after use						

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Washing Drying Sanitizing It is necessary to use complete clean cooking outfit at all times. While at work, It isnot appropriate to use the following: Strong perfumes nail polish other accessories						
TOTAL						

SPEED	Highly Agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Highly Disagree (1)	Score
1. It is necessary to maximize the allotted time for laboratory work. 2. It is important to be time-bounded when doing the laboratory activities.						
TOTAL						

ACCURACY	Highly Agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Highly Disagree (1)	Score
It is necessary to follow the recipe in terms of Appropriate measurement of ingredients Step by step procedure It is a must to check and review properly the recipe before doing laboratory activity.						
TOTAL						

KILLS AND EXECUTION	Highly Agree (5)	Agree (4)	Undecided (3)	Disagree (2)	Highly Disagree (1)	Score
It is appropriate to apply techniques and stylein the performance of thelaboratory activity. It is necessary to apply familiarity to the recipe used. It is appropriate to use interactive communication with others while at work.						
TOTAL						

Appendix C

Instructional Modules in International Cuisine

Skills Test

Name: _____Year/sec:_____ Date _____Score_____

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CLEANLINESS AND ORDERLINESS	VGE (5)	GE (4)	ME (3)	Fair (2)	NA (1)	Score
1. Mise-en-place was arranged according to standard 2. Tools and equipment were properly washed and dried 3. Tools and equipment were properly identified						
TOTAL						

SPEED& ACCURACY	VGE (5)	GE (4)	ME (3)	Fair (2)	NA (1)	Score
1. Managed time efficiently 2. Applied techniques and style						
TOTAL						

PROPER PLACEMENT	VGE (5)	GE (4)	ME (3)	Fair (2)	NA (1)	Score
1. Used decoy system appropriately. 2. Additional tools were properly identified.						
TOTAL						

Appendix D

Table A. Schedules in Writing the Modules

STEPS	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1. Identification of Objectives, Lessons & Concepts	☆							
2. Construction of Pre test and Post test		☆						
3. Preparation of Instructional Modules		☆	☆	☆				
4. Final Revision of the Module					☆			
5. Try-out of the modules					☆	☆	☆	☆

Table B. t-test table for pretest and posttest on Student's Skills (Module 1)

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Indicators		Mean	N	Std. Deviation	Std. Error Mean	T	df	Sig. (2-tailed)
Lesson 1								
a.cleanliness and orderliness	pretest	2.53	20	.50034	.1119	-15.75	19	.000
	posttest	4.66	20	.41886	.0937			
b.speed& accuracy	pretest	2.45	20	.51042	.1141	-14.14	19	.000
	posttest	4.65	20	.366535	.0819			
c. proper placement	pretest	2.45	20	.51042	.1141	-12.86	19	.000
	posttest	4.57	20	.40662	.0909			
d.Skills and execution	pretest	2.30	20	.47016	.1051	-17.55	19	.000
	posttest	4.48	20	.36724	.0821			
Lesson 2								
a.preparation	pretest	2.47	20	.28096	.0645	-26.73	18	.000
	posttest	4.79	20	.27664	.0635			
b.palatability	pretest	2.53	20	.33271	.0744	-20.65	19	.000
	posttest	4.85	20	.27506	.0615			
c.skills and execution	pretest	2.30	20	.34075	.0761	-21.54	19	.000
	posttest	4.77	20	.34394	.0769			
d.presentation	pretest	2.42	20	.34098	.0762	-24.50	19	.000
	posttest	4.68	20	.36664	.0819			
Lesson 3								
a.cleanliness and orderliness	pretest	2.53	20	.22923	.0513	-25.90	19	.000
	posttest	4.78	20	.31064	.0695			
b.speed	pretest	2.53	20	.47226	.1056	-21.07	19	.000
	posttest	4.75	20	.34412	.0770			
c.skills and execution	pretest	2.42	20	.24082	.0539	-20.11	19	.000
	posttest	4.62	20	.43668	.0976			
Lesson 4								
a.preparation	pretest	2.35	20	.38260	.0856	-17.02	19	.000

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	posttest	4.72	20	.34713	.0776			
b.palatability	pretest	2.23	20	.36085	.0807	-24.98	19	.000
	posttest	4.80	20	.27330	.0611			
c.skills and execution	pretest	2.33	20	.26491	.0592	-27.95	19	.000
	posttest	4.73	20	.35257	.0788			
d.presentation	pretest	2.16	20	.30202	.0693	-19.45	18	.000
	posttest	4.60	20	.36215	.0831			
Lesson 5								
a.preparation	pretest	2.25	20	.37343	.0835	-20.86	19	.000
	posttest	4.63	20	.40331	.0902			
b.palatability	pretest	2.13	20	.31322	.0700	-25.91	19	.000
	posttest	4.55	20	.42968	.0961			
c. skills and execution	pretest	2.17	20	.31493	.0704	-23.90	19	.000
	posttest	4.52	20	.35102	.0785			
d.presentation	pretest	2.30	20	.28384	.0635	-15.96	19	.000
	posttest	4.70	20	.59242	.1325			

Table C. t-test table for pretest and posttest on Student's Skills (Module 2)

Indicators		**Mean**	**N**	**Std. Deviation**	**Std. Error Mean**	**T**	**df**	**Sig. (2-tailed)**
Lesson 1								
a.planning	pretest	3.49	20	.52389	.1171	-11.44	19	.000
	posttest	4.85	20	.12871	.0288			
b.menu and recipe preparation	pretest	3.48	20	.43482	.0972	-11.21	19	.000
	posttest	4.77	20	.28390	.0634			
Lesson 2								
a.preparation	pretest	2.62	20	.64224	.1033	-15.92	19	.000
	posttest	4.83	20	.29718	.0664			
b.palatability	pretest	2.72	20	.40871	.0913	-13.62	19	.000

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	posttest	4.45	20	.31243	.0698			
c.skills and execution	pretest	2.67	20	.43273	.0967	-15.00	19	.000
	posttest	4.37	20	.28570	.0638			
d.presentation	pretest	2.43	20	.44741	.1004	-19.01	19	.000
	posttest	4.37	20	.28570	.0638			
Lesson 3								
a.preparation	pretest	2.93	20	.35258	.0788	-15.52	19	.000
	posttest	4.42	20	.28507	.0637			
b.palatability	pretest	2.68	20	.47813	.1069	-13.25	19	.000
	posttest	4.32	20	.29709	.0664			
c.skills and execution	pretest	2.85	20	.41189	.0921	-12.64	19	.000
	posttest	4.37	20	.32388	.0724			
d.presentation	pretest	2.68	20	.41179	.0920	-16.61	19	.000
	Posttest	4.37	20	.28570	.0638			

Table D. t-test for pretest and posttest on Student's Attitude

Indicators		**Mean**	**N**	**Std. Deviation**	**Std. Error Mean**	**t**	**df**	**Sig. (2-tailed)**
Module 1								
a.In observing cleanliness while at work, it is appropriate to observe the rules wholeheartedly and conscientiously.	pretest	2.40	20	.41103	.0919	-22.99	19	.000
	posttest	4.79	20	.29791	.6662			
b.It is important to be time bounded when doing the laboratory activity	pretest	2.43	20	.37297	.0834	-15.58	19	.000
	posttest	4.60	20	.44721	.1000			
c.It is necessary to follow and check the recipe before doing the activity	pretest	2.23	20	.30880	.0690	-22.19	19	.000
	posttest	4.60	20	.35288	.0789			
d.It is appropriate to apply techniques and style and use interactive communication with others while at work.	pretest	2.18	20	.27639	.0634	-16.70	19	.000
	posttest	4.54	20	.53655	.1230			

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Module 2								
a.When planning a menu, it is important to consider the target market, capacity of the kitchen, location and availability of materials.	pretest	2.34	20	.36541	.0817	-20.98	19	.000
	posttest	4.67	20	.30756	.0687			
b.In menu preparation, it is important to provide variety and balanced food and complementary items.	pretest	2.37	20	.40027	.0895	-22.91	19	.000
	posttest	4.74	20	.36937	.0825			
c.It is appropriate to consider the budget of the target market.	pretest	2.33	20	.32272	.0721	-25.15	19	.000
	posttest	4.70	20	.24709	.0552			

Table E. Group Statistics (experimental & control groups) Post test Knowledge

	group	N	Mean	Std. Deviation	Std. Error Mean
module 1	experimental	20	19.9000	.30779	.06882
	control	20	19.2000	.76777	.17168
module2	experimental	20	30.0000	.00000	.00000
	control	20	22.1000	.64072	.14327

Table F. Independent Samples Test (experimental & control groups) Post test Knowledge

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
module 1	Equal variances assumed	19.329	.000	3.785	38	.001	.7000	.18496	.32557	1.07443
	Equal variances not assumed			3.785	24.953	.001	.7000	.18496	.31903	1.08097
module2	Equal variances	10.277	.003	55.141	38	.000	7.9000	.14327	7.60996	8.19004

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	assumed									
	Equal variances not assumed			55.141	19.000	.000	7.9000	.14327	7.60013	8.19987

Table G. Group Statistics (experimental & control groups) Pre test Knowledge

	group	N	Mean	Std. Deviation	Std. Error Mean
module 1pre	experimental	20	2.2000	2.01573	.45073
	control	20	2.3500	1.84320	.41215
module 2 pre	experimental	20	10.3000	2.97534	.66531
	control	20	11.2000	2.04167	.45653

Table H. Independent Samples Test (experimental & control groups) Pretest Knowledge

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
module 1pre	Equal variances assumed	.077	.783	-.246	38	.807	-.1500	.61076	-1.38642	1.08642
	Equal variances not assumed			-.246	37.700	.807	-.1500	.61076	-1.38674	1.08674
module 2 pre	Equal variances assumed	1.800	.188	-1.115	38	.272	-.9000	.80688	-2.53344	.73344
	Equal variances not assumed			-1.115	33.646	.273	-.9000	.80688	-2.54041	.74041

Table I. Group Statistics (experimental & control groups) Pre-tests and Post tests for Attitude and Skills

	group	N	Mean	Std. Deviation	Std. Error Mean
Module 1 attitude pre-test	experimental	20	2.3075	.27103	.06060
	control	20	2.2661	.21336	.04771
Module 1 attitude post test	experimental	20	4.6341	.27085	.06056
	control	20	3.7744	.40128	.08973

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Module 2 attitude pre-test	experimental	20	2.3465	.26083	.05832
	control	20	2.3570	.24750	.05534
module 2 attitude posttest	experimental	20	4.7027	.24725	.05529
	control	20	4.0582	.45354	.10142
Module 2 skills pretest	experimental	20	2.9590	.21205	.04742
	control	20	2.4232	.18767	.04196
module 2 skills posttest	experimental	20	4.5313	.09286	.02076
	control	20	3.8551	.24519	.05483
Module 1 skills pretest	experimental	20	2.3667	.08898	.01990
	control	20	2.3115	.08498	.01900
module 1 skills posttest	experimental	20	4.6801	.18489	.04134
	control	20	3.8192	.17981	.04021

Table J. Independent Samples Test (experimental & control groups) Pre-tests and Post tests for Attitude and Skills

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Module 1 attitude pre-test	2.500	.122	.536	38	.595	.0414	.07713	-.11477	.19752
			.536	36.015	.595	.0414	.07713	-.11505	.19780
Module 1 attitude post test	2.319	.136	7.942	38	.000	.8597	.10825	.64060	1.07890
			7.942	33.336	.000	.8597	.10825	.63959	1.07991
Module 2 attitude pre-test	.085	.772	-.131	38	.897	-.0105	.08040	-.17327	.15227
			-.131	37.896	.897	-.0105	.08040	-.17328	.15228
module 2 attitude posttest	6.032	.019	5.580	38	.000	.6445	.11551	.41067	.87833
			5.580	29.377	.000	.6445	.11551	.40839	.88061
Module 2 skills pretest	.269	.607	8.462	38	.000	.5358	.06332	.40761	.66397
			8.462	37.446	.000	.5358	.06332	.40755	.66404
module 2 skills posttest	19.484	.000	11.533	38	.000	.6762	.05863	.55747	.79484
			11.533	24.341	.000	.6762	.05863	.55524	.79706

Module 1 skills pretest	.000	.997	2.007	38	.052	.0552	.02751	-.00048	.11091
			2.007	37.920	.052	.0552	.02751	-.00048	.11092
module 1 skills posttest	.193	.663	14.930	38	.000	.8610	.05767	.74422	.97771
			14.930	37.971	.000	.8610	.05767	.74422	.97771

Table K. Paired Samples Statistics (Pre-test and Posttest) for Experimental group

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Module 1 attitude pre-test	2.3075	20	.27103	.06060
	Module 1 attitude post test	4.6341	20	.27085	.06056
Pair 2	Module 2 attitude pre-test	2.3465	20	.26083	.05832
	module 2 attitude posttest	4.7027	20	.24725	.05529
Pair 3	Module 2 skills pretest	2.9590	20	.21205	.04742
	module 2 skills posttest	4.5313	20	.09286	.02076
Pair 4	Module 1 skills pretest	2.3667	20	.08898	.01990
	module 2 skills posttest	4.6801	20	.18489	.04134
Pair 5	module 1 post	19.9000	20	.30779	.06882
	module 1pre	2.2000	20	2.01573	.45073
Pair 6	module 2 post	30.0000	20	.00000	.00000
	module 2 pre	10.3000	20	2.97534	.66531

Table L. Paired Samples Test (Pre-test and Posttest) for Experimental group

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	**Module 1** attitude pre-test - Module 1 attitude post test	-2.3266	.38633	.08639	-2.5074	-2.1458	-26.933	19	.000
Pair 2	**Module 2** attitude pre-test - module 2 attitude posttest	-2.3562	.32255	.07212	-2.5071	-2.2052	-32.668	19	.000
Pair 3	**Module 2** skills pretest - module 2 skills posttest	-1.5723	.23186	.05185	-1.6808	-1.4638	-30.327	19	.000
Pair 4	**Module 1** skills pretest - module 2 skills posttest	-2.3134	.21604	.04831	-2.4146	-2.2123	-47.891	19	.000
Pair 5	**module 1** knowledge post – test module 1pre	17.7000	2.07998	.46510	16.7265	18.6735	38.057	19	.000
Pair 6	**module 2** knowledge post – test module 1pre	19.7000	2.97534	.66531	18.3075	21.0925	29.610	19	.000

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Table M. Paired Samples Statistics (Pre-test and Posttest) for Control group

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Module 1 attitude pre-test	2.2661	20	.21336	.04771
	Module 1 attitude post test	3.7744	20	.40128	.08973
Pair 2	Module 2 attitude pre-test	2.3570	20	.24750	.05534
	module 2 attitude posttest	4.0582	20	.45354	.10142
Pair 3	Module 2 skills pretest	2.4232	20	.18767	.04196
	module 2 skills posttest	3.8551	20	.24519	.05483
Pair 4	Module 1 skills pretest	2.3115	20	.08498	.01900
	module 2 skills posttest	3.8192	20	.17981	.04021
Pair 5	module 1 post	19.2000	20	.76777	.17168
	module 1pre	2.3500	20	1.84320	.41215
Pair 6	module 2 post	22.1000	20	.64072	.14327
	module 2 pre	11.2000	20	2.04167	.45653

Table N. Paired Samples Test (Pre-test and Posttest) for Control group

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	**Module 1** attitude pre-test - Module 1 attitude post test	-1.5083	.43954	.09828	-1.7140	-1.3025	-15.346	19	.000
Pair 2	**Module 2** attitude pre-test - module 2 attitude posttest	-1.7012	.51758	.11573	-1.9434	-1.4589	-14.699	19	.000
Pair 3	**Module 2** skills pretest - **module 2** skills posttest	-1.4319	.20668	.04621	-1.5287	-1.3352	-30.984	19	.000
Pair 4	**Module 1** skills pretest - module 1 skills posttest	-1.5077	.15698	.03510	-1.5812	-1.4342	-42.952	19	.000
Pair 5	**module 1** knowledge post – test module 1pre	16.8500	1.92696	.43088	15.9482	17.7518	39.106	19	.000
Pair 6	**module 2** knowledge post – test module 1pre	10.9000	2.31471	.51759	9.8167	11.9833	21.059	19	.000

Appendix E

TRAINING REGULATIONS FOR

COMMERCIAL COOKING NC II

SECTION 1 COMMERCIAL COOKING NC II QUALIFICATION

The **COMMERCIAL COOKING NC II** Qualification consists of competencies that a person must achieve to clean kitchen areas, cook hot and cold meals, and prepare, portion and plate meat/food to guests in hotels, motels, restaurants, clubs, canteens, resorts and luxury lines/cruises.

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This Qualification is packaged from the competency map of the **Tourism Sector (Hotel and Restaurant)** as shown in Annex A

The Units of Competency comprising this Qualification include the following:

CODE NO. BASIC COMPETENCIES

500311105	Participate in workplace communication
500311106	Work in a team environment
500311107	Practice career professionalism
500311108	Practice occupational health and safety procedures

CODE NO. COMMON COMPETENCIES

TRS311201	Develop and update industry knowledge
TRS311202	Observe workplace hygiene procedures
TRS311203	Perform computer operations
TRS311204	Perform workplace and safety practices
TRS311205	Provide effective customer service

CODE NO. CORE COMPETENCIES

TRS512328	Clean and maintain kitchen premises
TRS512325	Organize and prepare food
TRS512338	Select, prepare and cook meat
TRS512327	Receive and store kitchen supplies
TRS512331	Prepare stocks, sauces and soups
TRS512339	Prepare cook and serve food for menus
TRS512329	Prepare appetizers and salads
TRS512330	Prepare sandwiches
TRS512332	Prepare vegetables, fruits, eggs and starch products
TRS512333	Prepare and cook poultry and game

TRS512337	Prepare and portion controlled meat cuts
TRS512334	Prepare and cook seafood
TRS512335	Prepare hot and cold desserts
TRS741336	Prepare pastry, cakes, and yeast-based products
TRS512326	Present food
TRS512340	Package prepared foodstuffs

A person who has achieved this Qualification is competent to be :

- Commis 1,2,3
- Pastry Cook
- Hot-Kitchen Cook
- Pantry Worker/Cold-Kitchen Cook/Gardemanger
- Saucier