## LEARNING & CREATIVITY PLAN (L&C PLAN): RESEARCH – SERVICES EVALUATION

| **S** | **T** | **E**ng | **A** | **M** | **E**nt |
|:---:|:---:|:---:|:---:|:---:|:---:|
| ☐ | ☒ | ☐ | ☐ | ☒ | ☒ |

## 1. Overview

| | |
|---|---|
| Title | **Research – Services Evaluation** |
| Driving Question or Topic | How do I evaluate the services of a private or public body for continuous improvement? |
| Ages, Grades, … | AGES:13-18          7th - 12th grade |
| Duration, Timeline, Activities | 22 LEARNING HOURS     11*90 MINUTES          4 ACTIVITIES |
| Curriculum Alignment | Research Methodology, Statistics, Services Evaluation |
| Contributors, Partners | |
| Abstract - Synopsis | Students are involved in a real research process with application in services evaluation. Basic issues and stages of the research process are taught, from the formulation of the problem and the goal to the final presentation of the results and conclusions. |
| References, Acknowledgements | |

## 2. STEAME Framework[*]

| | |
|---|---|
| Teachers' Cooperation | • 1st Teacher 1 (T1)- Teacher of Economics, Administrative Science <br> Bibliography study, teaching important factors of service quality, presentation of other relevant, similar research. <br> Classroom. <br> • 2nd Teacher (T2) - Teacher of Mathematics, Statistics, Research Methodology <br> Teaching  data collection methods, construction of appropriate questionnaires, sampling methods and techniques, methods of checking the validity of the questionnaire, coding of questions and answers, methods of statistical analysis and presentation of results. <br> Classroom. <br> • 3rd Teacher (T3) - Teacher of Mathematics, Statistics, Research Methodology or Computer Science <br> Teaching the construction of electronic questionnaires (eg Google Forms) or data entry (in Excel Spreadsheet or other Database). <br> Teaching statistical analysis methods and graphical presentation of results (using Excel and Analysis Tool Pak or another statistical analysis package eg SPSS). <br> Teaching the creation of a suitable electronic presentation (PPT or INFOGRAPHICS or VIDEO or PPT with voice over) but also the writing an appropriate detailed report that describes all the stages of the research as well as the conclusions. <br> Computer Lab. |

| | |
|---|---|
| STEAME in Life (SiL) Organization<br><br>Action Plan Formulation | This research activity definitely involves representatives from a body that offers the services under evaluation in most of the teaching and implementation stages.<br>**STAGE I**: Preparation by one or more teachers [STEPS 1-3], and<br>**STAGE II**: Action Plan Formulation [Preparation STEPS 1-2]…<br>Refers to the creation of this Learning Plan, by teachers in collaboration<br>.<br><br>**STAGE II**: Action Plan Formulation [Development STEPS 3-12]…<br>Refers to the realization by the students of the six activities of the Learning Plan. The support, feedback and evaluation by the teachers is accompanying throughout the implementation of the activities and not only the final result. |

## 3. Objectives and Methodologies

| | |
|---|---|
| Learning Goals and Objectives | By the end of the L&C Plan, students should be able to know and complete the following:<br><br>&bull; Important factors for evaluating Services<br>&bull; Data Collection Methods and Sampling Methods and Techniques<br>&bull; Construction and use of appropriate questionnaires (printed or electronic)<br>&bull; Questionnaire validity and reliability control methods (use of appropriate software)<br>&bull; Methods of statistical analysis and presentation of results (use of appropriate software)<br>&bull; Presentation of results - Writing a detailed research report |
| Learning Outcomes and expected Results | Upon completion of this research activity, students will be able to follow the stages of a research process, set research goals and objectives, evaluate services or other relative activities, construct questionnaires, collect answers, analyze them and present the results and conclusions of their research. These skills are very important in the 21st century |
| Prior Knowledge and Prerequisites | Basic knowledge of descriptive statistics and use of spreadsheets (excel). |
| Motivation, Methodology, Strategies, Scaffolds | The learning process is based on the involvement of students and their teachers in a real process of evaluating the services of a community service provider that would be of interest to students. The result will be a review or improvement of these services, for the benefit of the service provider (s.p.) and for the benefit of the students or citizens who use these services. The importance of the results is in itself a great motivator.<br>On the other hand, the skills acquired throughout the research are also very important for the citizen of the 21st century. These skills are acquired through contacts - consultations with the representatives of the body that offers the services, but also the team work for the construction of questionnaires (printed and electronic), data collection and input, data analysis, presentation of results and drawing conclusions.<br>Throughout this process there is continuous discreet support from teachers and evaluation, feedback for the deliverables at each stage. |

## 4. Preparation and Means

| | |
|---|---|
| Preparation, Space Setting, *Troubleshooting Tips* | The theoretical framework will be taught in the classroom. However, the students will process the questionnaires (printed or electronic), the data entry, |

| | |
|---|---|
| **Resources, Tools, Material, Attachments, Equipment** | the statistical analysis and the preparation of the presentation of the results in the computer laboratory (with the support of the teachers). |
| | • Important factors for evaluating Services |
| |     o [EN] 3 Ways to Evaluate Your Services - Foto |
| |     o [EN] How To Measure Quality of Service \| Service Quality - Qualtrics |
| | • Data Collection Methods and Sampling Methods and Techniques |
| |     o [EN] sampling ppt - SlideShare |
| |     o [EN] Sampling techniques - SlideShare |
| |     o [EN] Sampling Design, Questionnaire Design & Data ib - SlideShare |
| | • Construction and use of appropriate questionnaires (printed or electronic) |
| |     o [EN] questionnaire design in research - SlideShare |
| |     o [EN] Questionnaire and its Types - SlideShare |
| |     o [EN] Top 21 Best Online Survey Software and Questionnaire Tools ... |
| |     o [EN] How to Create a Free Online Survey with Google Docs ... |
| | • Questionnaire validity and reliability control methods (use of appropriate software) |
| |     o [EN] Reliability test: Compute Cronbach's alpha using SPSS ... |
| |     o [EN] Reliability test: Interpret Cronbach's alpha output in |
| |     o [EN] Calculating Cronbach's Alpha in Microsoft Excel Compared to ... |
| | • Methods of statistical analysis and presentation of results (use of appropriate software) |
| |     o [EN] How to Use SPSS for Beginners - Online Statistics |
| |     o [EN] SPSS Tutorial (for Beginners): Learn Online in Simple Steps ... |
| |     o [EN] Use the Analysis ToolPak to perform complex data analysis ... |
| | • Presentation of results - Writing a detailed research report |
| |     o [EN] 5 Ways to Effectively Present Survey Data - Survey Anyplace |
| |     o [EN] Presenting survey results – Report writing - Queensland ... |
| |     o [EN] AN ASSESSMENT OF THE EFFECTIVENESS OF LIBRARY (report)... |
| |     o [EN] An Assessment Of The Effectiveness Of Library Resources (ppt)... |
| *Safety and Health* | |

## 5. Implementation

| | |
|---|---|
| Instructional Activities, Procedures, Reflections | The plan can be implemented in 22 learning hours. The first 4 are theoretical but also include a meeting or presence of the representative of the body that offers the services that will be evaluated. The rest include a theoretical framework in parallel with practical application, work monitoring, feedback, evaluation.<br><br>1. Important factors for evaluating Services<br><div align="right">(4 learning hours)</div>T1 teaches the important factors of service quality assessment.<br>Meetings (or presence in the classroom) are arranged, with a representative of the body that provides specific service/es that will be evaluated, to make the target and the goal of the research more specific.<br>Bibliography is reviewed to find a possible similar procedure followed by other relevant bodies.<br><br>2. Data Collection Methods and Sampling Methods and Techniques<br><div align="right">(2 learning hours)</div>T2 teaches the methodology of a research process, as well as the various data collection methods and sampling techniques. Students under the guidance of their teacher are asked to choose the appropriate methodology for their own research.<br>Teaching methods of data collection, construction of appropriate questionnaires, methods - sampling techniques, methods of checking the validity of the questionnaire, coding of questions and answers, methods of statistical analysis and presentation of results.<br><br>3. Construction and use of appropriate questionnaires (printed or electronic)<br>Questionnaire validity and reliability control methods (use of appropriate software)<br>Methods of statistical analysis and presentation of results (use of appropriate software)<br><div align="right">(8 learning hours)</div><br>T2 and T3 in collaboration teach students how to construct appropriate printed or electronic questionnaires. They also teach ways to encode questions and answers, and to enter data or prepare the database for processing.<br>The theoretical framework as well as the use of appropriate software for checking the validity and reliability of the questionnaire, as well as basic methods of statistical analysis of questionnaires are also taught.<br>After completing the theoretical framework, the students are divided into groups.<br>The 1st group deals with the construction of the questionnaire with appropriate questions, the 2nd group is trained in the conversion of the questionnaire in electronic form or in the coding and data input and the 3rd group is trained in data analysis methods using appropriate software. The groups interact with each other both in the initial stages and afterwards.<br>After the questionnaire is constructed in its first version (printed or electronic) it is given for testing to a small group of people.<br>The questionnaire is checked if it is legible, with simple and understandable questions, if bias is avoided from the wording of the questions, if the questions measure what we want, etc. Then the appropriate interventions are made for the final form of the questionnaire that will be available for the main survey. |

From the first, small-scale sharing of the questionnaire, some initial conclusions or some points may emerge that may need more detailed investigation and may need to be included in the final form of the questionnaire.

It may be that at some points clarifying open-ended questions need to be added (eg indicate what additional service you would like this service body to offer.)

At this stage, all three groups of students we mentioned work together.

The final questionnaire is then shared to the sample selected for the main survey.

4. Presentation of results - Writing a detailed research report

(8 learning hours)

Until the questionnaires and the data collection is completed, T3 teaches students methods for effectively presenting the results and writing a research report.

When the answers of the questionnaire are collected (all students participate in this process), the first preliminary analysis of the answers is done with simple descriptive statistics. In the first presentation of the results, we have preliminary conclusions and further research issues are discussed and formulated for a more detailed analysis of the questions, in topics that may be of interest, e.g.

•Checking the differentiation of the answers according to various demographic data (eg Age, Gender, Area, Educational Level, etc.)

• Correlations or groupings of the questions

• Reliability Test

Detailed Statistical Analysis is performed, and appropriate graphics are used for better presentation of the conclusions.

The presentation of the results as well as the writing the research report is being prepared.

At this point students can work again in groups both to investigate with statistical methods the various questions, but also to prepare the individual stages of the presentation or research report.

Alternatively, students can work in groups and each group can prepare different presentations and reports.

T1, T2 and T3 provide ongoing support, feedback, and evaluation.

| | |
|---|---|
| Assessment - Evaluation | The feedback and evaluation is continuous, from the point of construction of the appropriate questionnaire and throughout the process of conducting the research, the analysis and the presentation of the results. |
| Presentation - Reporting - Sharing | The presentation of the results will be done in front of the representatives of the body that provides the services, but possibly also in front of all the interested students of the school.<br>Both the presentation and the research report can be published on the school website or the websites of the community or the service provider. |
| *Extensions - Other Information* | The results will certainly be the trigger for the specific body that offers the services to take actions to improve and modernize the processes and services it provides.<br>Interested students can continue to contribute in this direction and after the end of the research. |

## Research – Services Evaluation

*Major steps in the STEAME learning approach:*

# STAGE I: Preparation by one or more teachers

1. <u>Formulating initial thoughts on the thematic sectors/areas to be covered</u>

Teaching the following important topics:

- Important factors for evaluating Services
- Data Collection Methods and Sampling Methods and Techniques
- Construction and use of appropriate questionnaires (printed or electronic)
- Questionnaire validity and reliability control methods (use of appropriate software)
- Methods of statistical analysis and presentation of results (use of appropriate software)
- Presentation of results - Writing a detailed research report

2. <u>Target Age Group of Students - Associating with the Official Curriculum - Setting Goals and Objectives</u>

It can be taught in all classes from grade 7 to grade 12. Depending on the age of the students and the time available, the level of statistical analysis that will be done may increase.

3. <u>Organization of the tasks of the parties involved - Designation of Coordinator - Workplaces etc.</u>

- 1st Teacher 1 (T1)- Teacher of Economics, Administrative Science

    Bibliography study, teaching important factors of service quality, presentation of other relevant, similar research.

Classroom.

- 2nd Teacher (T2) - Teacher of Mathematics, Statistics, Research Methodology

    Teaching data collection methods, construction of appropriate questionnaires, sampling methods and techniques, methods of checking the validity of the questionnaire, coding of questions and answers, methods of statistical analysis and presentation of results.

Classroom.

- 3rd Teacher (T3) - Teacher of Mathematics, Statistics, Research Methodology or Computer Science

    Teaching the construction of electronic questionnaires (eg Google Forms) or data entry (in Excel Spreadsheet or other Database).

    Teaching statistical analysis methods and graphical presentation of results (using Excel and Analysis Tool Pak or another statistical analysis package eg SPSS).

    Teaching the creation of a suitable electronic presentation (PPT or INFOGRAPHICS or VIDEO or PPT with voice over) but also the writing an appropriate detailed report that describes all the stages of the research as well as the conclusions.

Computer Lab.

# STAGE II: Action Plan Formulation

1. Relation to the Real World – Reflection
   All Public and Private Sector Bodies, offering Services must be evaluated at regular intervals so that they can redefine their goals and improve their processes, always focusing on providing the best services to their clients.
   The evaluation process is considered extremely vital to maintain the quality of the services, but also for maintaining high standards in the modern and rapidly changing needs of the society in the 21st century.



© Can Stock Photo

2. Formulation of a problem (possibly in stages or phases) resulting from the above
   Both individually and as social groups we need daily service in various services necessary for our better life in a modern city.
   The student / teacher team can contact institutions that offer such services to the community or municipality or any other private organization that would like to work with them to evaluate the services they offer.
   The aim is always to identify the degree of satisfaction of those served with various quality criteria, as well as criteria of service necessity and the expectations of "customers", always aiming at the best possible service and optimization of processes and services offered.

3. Background Creation - Search / Gather Information
   Students are taught methodology in the processes of evaluation and improvement of services. Meetings are arranged with a specific service/es provider that will be evaluated; the literature is reviewed to find a possible similar process by other relevant bodies.

4. Simplify the issue - Configure the problem with a limited number of requirements
   Οι μαθητές καλούνται  σε συνεργασία με τους καθηγητές τους και τους αρμόδιους στον συνεργαζόμενο φορέα να εντοπίσουν τις βασικές υπηρεσίες που πρέπει να επικεντρωθούν για να αξιολογήσουν καθώς και τον «πληθυσμό» των ατόμων που θα επικεντρωθεί η έρευνα για την αξιολόγηση των υπηρεσιών αυτών.

5. Case Making - Designing - identifying materials for building / development / creation

   After completing the theoretical framework, the students are divided into groups.
   The 1st group deals with the construction of the questionnaire with appropriate questions, the 2nd group is trained in the conversion of the questionnaire in electronic form or in the coding and data input and the 3rd group is trained in data analysis methods using appropriate software. The groups interact with each other both in the initial stages and afterwards.

6. Observation-Experimentation - Initial Conclusions
   After the questionnaire is constructed in its first version (printed or electronic) it is given for testing to a small group of people.

The questionnaire is checked if it is legible, with simple and understandable questions, if bias is avoided from the wording of the questions, if the questions measure what we want, etc. Then the appropriate interventions are made for the final form of the questionnaire that will be available for the main survey.

From the first, small-scale sharing of the questionnaire, some initial conclusions or some points may emerge that may need more detailed investigation and may need to be included in the final form of the questionnaire.

It may be that at some points clarifying open-ended questions need to be added (eg indicate what additional service you would like this service body to offer.)

At this stage, all three groups of students we mentioned work together. The final questionnaire is then shared to the sample selected for the main survey.

7. Gathering of results / information based on points 5, 6
   First group presentation by students
   When the answers of the questionnaire are collected (all students participate in this process), the first preliminary analysis of the answers is done with simple descriptive statistics. In the first presentation of the results, we have preliminary conclusions and further research issues are discussed and formulated for a more detailed analysis of the questions, in topics that may be of interest, e.g.
   •Checking the differentiation of the answers according to various demographic data (eg Age, Gender, Area, Educational Level, etc.)
   • Correlations or groupings of the questions
   • Reliability Test

8. Configure mathematics or other STEAME models to describe / represent / illustrate the results
   Detailed Statistical Analysis is performed and appropriate graphs are used for the proper presentation of the conclusions on the issues discussed in step 7.

9. Studying the results in 7 and drawing conclusions, using 8
   Students compare their preliminary results at 7 with the most accurate, documented results at 8 and draw conclusions.

10. Review the problem and review it under more demanding conditions
    • The research can be extended to other services offered by the specific service provider or similar services offered by other providers.
    • Statistical Analysis can be extended to more complex models for predicting the degree of "customer" satisfaction with a service, according to their responses to various "important" factors (after selecting the important factors appropriately).

11. Repeat steps 5 through 8 with additional or new requirements as formulated in 10

12. Presentation of Conclusions - Communication Tactics.
    The presentation of the conclusions can be done using the technology, for presenting the need for evaluation of the services of the provider in the modern and rapidly changing environment in which we live, the important research findings and suggestions for changes of procedures or other improvement interventions needed according to the research.
    Necessary skills at this point are the creation of an appropriate electronic presentation (PPT or INFOGRAPHICS or VIDEO or PPT with voice over) but also the preparation of an appropriate detailed report that describes all the stages of the research as well as the conclusions.

13. Applications in Everyday Life - Suggestions for Developing 9 (Entrepreneurship - SIL Days)
    This activity involves representatives from a provider that provides the services under evaluation in most of the previous stages.

The results will certainly be the trigger for the specific provider to take actions to improve and modernize the processes and services it provides. Interested students can contribute in this direction after the end of the research.

Brief Description/Outline of Organizational Arrangements / Responsibilities for Action

| STAGE | Activities/Steps Teacher 1(T1) Cooperation with T2 and student guidance | Activities /Steps By Students Age Group: _____ | Activities /Steps Teacher 3 (T3) Cooperation with T1 and T2 and student guidance | |
|---|---|---|---|---|
| | | | | |
| A | Preparation of steps 1,2 | 1,2 | | |
| B | Teaching – Guidance 3,4 | 3,4 Meetings with the services provider representatives | | |
| C | Teaching – Guidance 5 | 5 | Teaching – Guidance 5 | |
| D | Guidance – Evaluation 6, 7 | 6, 7 Meeting with the services provider representatives | Support 6, 7 | |
| E | | 8 | Teaching - Support | |
| F | Guidance | 9 | Guidance | |
| G | Preparation 10 | 10 Meeting with the services provider representatives | Cooperation in 10 | |
| H | Καθοδήγηση | 11 (επανάληψη 4-9) | Support Guidance | |
| I | Creative Evaluation | 12 Meeting with the services provider representatives | Creative Evaluation | |
| K | | | | |
| | Organization (SIL) STEAME in Life | 13 Meeting with the services provider representatives | Organization (SIL) STEAME in Life | |