

Increasing the Effectiveness of Accounting Education through Activating Advanced Tools of Learning.

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Abstract: *The research treats with the development of accounting education by activating the use of some advanced tools in science and teaching methods, such as concept mapping, mind mapping and argument mapping. The importance of this subject is due to the expectations gap between the required knowledge and skills, by the employers, the International Federation of Accountants (IFAC) and the National Commission for Accreditation and Quality and the actual knowledge and skills, which the graduates of the accounting departments are obtained. Previous studies have been studied and analyzed in the field of accounting teaching and learning. It is clear that the accounting traditional education is characterized by the memorization, repetition and large number of students. The new strategy Students-Centered Learning (SCL) is accepted locally and internationally. In addition, the application of SCL strategy will lead to meaningful learning and the students will achieve accepted scores in the exams. The results study indicated that students would gain better professional skills if accounting education were supported by innovative tools such as concept, mind and argument mapping. The research recommended the need to enhance the accounting education with the advanced tools in the educational process with concept mind and argument mapping. Furthermore, the research commended the necessity to reduce the student number whenever possible and to conduct educational courses for lectures and faculty members and their assistants.*

Keywords: Traditional Education, Students Centered Learning (SCL), Meaningful Learning, Rote Education, Concept Mapping, Mind Mapping, Argument Mapping, Professional Skills.

(1) Introduction

The environment of business and the educational institutions are subject to a group of changes and developments. One of these rapid and successive changes and developments is the developed programs used in accounting education. The purpose of these developments is to raise the levels that are compatible with these changes and developments, with a commitment of efficiency and effectiveness. Experts try to prepare and develop knowledge and technical skills for students and graduates of the department of accounting, which are guided by the international standard No. 3, and issued by the international Federation of Accountants (IFAC) 1993. There is a gap between these two perspectives, the first presents the requirements of the standard and labor market, while the second includes actual knowledge, skills and experiences, which the students acquired them during the educational operations.

The development of the accounting education requires not only a group of procedures, but also a group of long and short-term strategies. These strategies must be linked to the main elements, which form the accounting education, such as the students, accounting performance, education tools, output in terms of graduate's ability to practice accounting education. The most popular strategies now is the strategy, which based on the student that is called Student- Centered Learning (SCL) Instead of the traditional approach that is based on the lecturer. Moreover, a strategy characterized by direct and clear meanings, which is called Meaningful Learning (ML), is needed, Instead of learning based on memorization and rote, which is called Rote Learning (RL).

Among the tools developed in learning are Concept Mapping (CM), Mind Mapping (MM) and Argument Mapping (AM). The process of development and increasing efficiency require determination and analysis the requirements of the international standard, which was linked with that field, and which match local national standards as well.

(2) Research Questions

The research problem is stated in the following three questions:-

(2-1) what are the nature, objectives, advantages and aspects of comparison of the advanced tools in the field of learning (CM, MM, and AM)?

(2-2) what are the opinions of faculty members and their assistants on the application of the three advanced tools (CM, MM, and AM) to students' acquisition of professional skills?

(2-3) What are the views of the postgraduate students' group on the application of the three advanced tools (CM, MM and AM) to students' acquisition of professional skills?

(3) Research Statistical Hypotheses

By presenting and analyzing the three questions included in the study, the following three hypotheses can be formulated:

(3-1) there are no statistically significant differences between the sample items of faculty members and their assistants towards the effect of applying the new tools (CM, Mm and AM) and the five professional skills on students.

(3-2) there are no statistically significant differences between the sample items of Graduate students towards the effect of applying the new tools (CM, Mm and AM) and the five professional skills on students.

(3-3) there are no significant differences between Materiality of the five professional skills components between the category of faculty members, their assistants and the category of graduate students.

(4) Research Objectives

(4-1) Increasing the effectiveness using the advanced tools in the field of learning (CM, MM , AM) and Learning Cycle LC.

(4-2) Clarifying the effective role of advanced tools in the field of learning towards the acquisition of graduates of the five professional skills that match the third international standard for accounting education.

(5) Research Methodology

Depending on research problem, Questions, hypotheses, objectives, and methodology, the research will include :-

(5-1) **Inductive descriptive methodology:** to get summaries about the three maps (CM, MM, and AM) and what is the theoretical framework for each of these maps. within the Arabic and foreign literatures.

(5-2) **Field Study:** By designing a list of questionnaire to know the opinions of accounting graduates, faculty members and their assistants about the activation of advanced tools, and the role of these tools in acquiring the students or the graduates on the five professional skills .

(6) Research Plan

(6-1-1-2) Steps of Preparing Concept Mapping

Concept mapping can be defined as a conceptual scheme that aims to identify concepts for a particular course or topic, where those concepts are organized according to one or more dimensions, so that the relationships between the main and sub-concepts become clear. Concept mapping are a way to represent the relationships between different ideas, images, and words. Therefore, it is used in the field of planning, teaching, summarizing and evaluating the main courses, and knowing the students' ability to understand and comprehend concepts. It is also used to test students to remember the concepts they learnt.

In addition, the aim of the study (Mirabella and Falahat, 2010) is to investigate the effectiveness of the concept mapping strategy in students' achievement of Arabic language compared to the normal method. The results showed that there were statistically significant differences in favor of the experimental group, which studied using the concept mapping strategy.

Furthermore, Al- Zoaby (2003) used the conceptual mapping technique as a strategy taught at Cornell University, where the learner was able to represent the conceptual structure he owned in any subject in the form of a hierarchical network diagram. The studies also indicated that the most important thing that affects education is what the learner has previously learned, what he learns and what he wants to learn. Conceptual mapping is a way to represent knowledge and organize it with broad lines, that show the relationships between concepts, including bidirectional relationships, and their division into meeting points and connecting lines, where circles represent the meeting points of various concepts, while connecting lines represent relationships between concepts. Words are also used to classify connecting lines and clarify relationships. .

It can be said that the preparation of the concept mapping goes through four stages as follows (Greenberg and Wilmer 2015):

- 1- *Data Collection Stage:* Assembling a list of concepts through a draft of one small piece of paper, or a group of small pieces or sticky cards, where each concept card has one to extract the concepts, ideas, main and side points.
- 2- *Organizing Stage:* preparing a second draft for building a preliminary map, choosing the appropriate type of design, whether hierarchical or spidery, longitudinal or transverse, and then converting what was collected into one map. However, if cards are made, it is possible to choose the best distribution for them and to choose the appropriate linking phrases between the cards.
- 3- *Design Stage:* The goal of this stage is to prepare a third draft, hierarchical or spidery, and to develop appropriate frameworks around concepts, ideas and sub-issues.

At that stage, the third version is prepared, which means reviewing previous tests, arranging groups and sections, drawing the last version manually using ready-made programs, using different colors or fonts on similar concepts and ideas, distinguishing arrows according to the importance of relationships.

(6-1-1-3) Standards on which concept Mapping is based:-

The standards that can be used in preparing the criteria can be listed as follows:

- (1) *Cognitive structure*. Where the main concepts are defined and arranged within the general concepts to the least general. The concepts are linked with lines on which a word or a sentence is written, and arrow heads are used at the end of the connecting lines to indicate the direction of the relationship between concepts, which helps to develop connections between closely related concepts.
- (2) *Prescriptive Differentiation*. Where the lecturer can differentiate between the concepts when the lecturer educate more.
- (3) *Integrative Conciliation*. Where the learner links two or more concepts and makes an amendment to generate an updated concept that carries a new meaning, and reconciles the previous and later learning and is distinguished from them. Learning is also based on an integrated view by linking concepts, whether more general or less than them.

(6-1-1-4) the Main Uses For Concept Mapping

Concept mapping have three main uses for the student and the lecturer, and for the assessment process.

(6-1-1-4-1) For the Student.

Concept mapping is a means of summarizing the knowledge content and writing notes and important points. It also helps to limit the information within limited spaces that facilitate the process of following it visually and mentally. It also helps in reviewing the academic content in a focused manner, linking new concepts with old concepts and distinguishing between similarities and differences, developing academic achievement, realizing the relationships between concepts, the stability of the educational attainment process, and considering these concepts as a strategy for thinking.

(6-1-1-4-2) For the Lecturer

Linking through the process of linking, bridging the knowledge gaps, the previous knowledge with the new one, clarifying the hierarchical relationships between the concepts used within one course, whether they are basic or subsidiary. In order to increase their contribution to the knowledge structure, facilitating meaningful learning through linking, bridging the knowledge gaps, more analytical processes for information, properly sequencing the 'syllabus'.

(6-1-1-4-3) For the Evaluator

Concept maps serve as a tool for diagnosis, analysis and evaluation of the student learning process, increasing the motivation of students' acquisition of knowledge and the relationships between them and working to discover misconceptions.

(6-1-1-5) Using Concept Mapping in Accounting Education

Accounting education seeks to study the cognitive processes and the difference between the rote learning (RL) and meaning learning (ML), besides the advanced scientific recent concepts, seminars and conferences that adopt a student-centered learning strategy.

Concept mapping represents two-dimensional diagrams of the relationships between concepts, and are arranged in a hierarchical form, from the most comprehensive concepts to the least. Concepts are surrounded by frameworks that are linked to each other by arrows on which the type of relationship is written, so caution is used to organize and plan the teaching and learning. Concept mapping also facilitates the assimilation of the scientific material and achieves effective learning.

The study (Greenberg and Wiener 2015) dealt with the application of concept mapping in accounting education, especially in the field of management and cost accounting. The authors made it clear that many students view the courses as vague courses that include many equations and models without emphasizing the links between them. Explanation of those courses using concept mapping and through the comprehensive arranged picture of all topics gives more understanding and comprehension, and increases the learning theory of accounting students. The use of mapping reduces the levels of ambiguity associated with these courses. They indicated that mapping is an illustrative tool that gives the teacher and student an alternative structure for traditional lectures. Its use lowers the levels of complacency associated with this.

The study of (Lawson, et al. 2014) pointed out that it is necessary to take into account the relative flexibility when design maps.

The international Institute of Management Accountants (IMA) and the sector of Administrative Accounting (MAS) form a team that works on the level of accounting work to bring a change in the accounting education to facilitate all obstacles.

The study of (Zadeh N. R. et al. 2015) investigated that the use of concept mapping by 124 students in the field of financial accounting at Taiwan, the results show that students benefited greatly from improving performance.

The study of (Chiou 2008) stresses that the use of concept mapping has an important positive impact on students' grades in the tests that were conducted after they were explained through concept mapping compared to the traditional approach to the lectures.

The study of (Greenberg and Wiener 2015) presented nine illustrative tables and nine schematics as graduated concept mapping. It also showed the integrated framework for the management accounting and costs accounting, and this is done actually in the system of Job Costing and Process Costing and the analysis of deviations at under different cases.

The study (Jacobs & Hershey 2002) confirms that when drawing a concept mapping, two concepts must be connected by connecting line and entitled by a connecting word that works on a certain hypothesis. The study (Hu Monica & Wu Hsiung 2012) also showed that applying concept maps to a sample of 131 students studying the nutrition course at Taiwan University and during two semesters leads to a reduction in cognition problems and an increase in the levels of understanding and clarification compared to the traditional approach to the education process.

In another study (Reiska et al. 2008), it became clear that the analysis of 311 scientific articles showed that the application of concept mapping is more prevalent in the natural sciences compared to the social sciences on the one hand, and that its application in the professional education of the natural sciences was more prevalent in the medical and engineering sciences. The study also recommended the need to expand its use in research and study rooms.

The goal of the study (Irvin, Cooper, and Jones 2006) was to raise the awareness regarding the process of preparing concept mapping as a mean to improve the students' understanding and raise the awareness of the interrelationships between financial accounting concepts. Where a number of charts were designed and presented to a sample of students to express their opinion on the subject of realizing profits and to judge whether they represent fraud or an inappropriate application of accounting standards. In another way, the distinction between the reality of reports and their falsification. Six sub-forms were made to detect fraud. Achieving high levels of understanding and awareness requires recourse to learning, not education. The same study sets three conditions for the success.

2- Students need to understand and comprehend the difference between concepts and the tools for linking them.

3- Stop using the same old methods of projects when linking the main and sub levels.

The study (Wallace & Mines 1990) used the points approach to maintain the sequence in the map. Where one point is given for immaterial information, five points for sub information, and ten points are given for main branch. While the study (Maas 2005) provided a framework for using concept or meaning learning in accounting education, it included a review of the extant literature on the effectiveness of concept mapping, guiding to introduce concept mapping in the classroom. This study presented many simple and complex concept maps that show assets, liabilities, various lists and analyzes, which showed their great usefulness.

(6-1-2) Mind Mapping

(6-1-2-1) Definition, Importance and Nature of Mind Mapping

The study (Buzant T. and Buzant B., 2000) mentioned that mind mapping are diagrams that contain a set of ideas, functions, and things that are connected and organized into a basic idea. This study is considered the first study that dealt with the mind map. The mental map is considered more simplistic compared to the concept mapping, where the mind map revolves around one main idea that many non-linear ramifications emerge from it, unlike concept maps that revolve around several concepts within the context of a specific issue.

The importance of mind maps is due to the fact that they organize the method of comprehension and place the subject's elements in the form of branches away from the lines of books that cause boredom and joy, which makes it easier for memorization and comprehension through a set of conditions: the name of the topic in the center of the page, making the page white, displaying one period in a certain color, and using images whenever possible.

According to the study (Yasmin A. 2009), one of the miracles of the human mind is that the neuron has one central point, from which a group of arms branch out, and each arm is branched from it by several smaller and finer arms.

Therefore, the textual information is replaced by graphics, squares and colors on the context of the neurons, which leads to the arrangement of the information in a manner similar to the neurons in order to facilitate the learner to access the information with the least time and effort, so the mind relaxes with the mental map compared to the information presented in traditional way. In general, mind maps work with the brain and encourage it to create connections between ideas.

(6-1-2-2) Advantages of Mind Mapping

These studies (Tawdry 2004; Fernand et al. 2002; Vokiri 2002; Biktimirov & Nelson 2006; Eriksson & Hauer 2000) showed that using mind maps would achieve further improvement in the learning processes in the form of an understanding of the analytical relationships, facilitating the tracking of written and verbal descriptions.

f applying concept mapping to students in general and to accounting students in particular:

1- Students must get to know how concepts change during their life expr

Among the advantages of mind maps (Chin S.F. & Maskal N. 2010; Orhan A. 2007) is that they represent a free form and an unrestricted structure, and there are no restrictions on ideas and correlations. They also encourage the progress of new ideas and brainstorming, and they give a comprehensive picture of the subject and decisions become more correct.

The researcher believes that relying on mental maps would support the phenomenon of brainstorming by activating the most positive teaching and learning methods.

(6-1-2-3) Electronic Mind Mapping (EMM)

EMM represents an important development for manual mind maps, as it represents one of the active learning strategies. It is an effective tool in strengthening memory, retrieving information and generating new, unfamiliar creative ideas. It works in the same steps as the human mind, which helps to activate and arrange information. Besides, it consists of a set of main steps: lines connecting ideas with each other, arrows to connect scattered ideas, and clarifying the direction and flow of these ideas. As well as geometric shapes such as square, rectangle, circle pictures, colors and symbols to bring the mind image. This map is also characterized by making learning more enjoyable and expressive more comprehensive, providing ideas and designing a structure full of knowledge.

(6-1-3) Argument Mapping

(6-1-3-1) the Nature of Argument Mapping.

The main objective of preparing these maps is to reach an interpretive structure for arguments. It has a hierarchical shape with concept mapping; it also depends on colors, shading, and thickness of lines, just as it is in mind maps. If the mind map is characterized by a high level of generality, and the concept mapping is characterized by a medium level of generality, then the argument map is described as having the lowest level of generality compared to the previous two types. Thus, the argument maps are more specific in the application process.

The components of argument maps include boxes and arrows, models of interpretation and arguments. The goal is to improve the ability to speak clearly, generate understanding, and communicate persuasive explanations by encouraging serious critical thinking.

The study (Hay et al., 2008) indicated that the need to distinguish between three cases: Non-learning, Rote learning, and meaningful learning.

(6-1-3-2) Advantages of Using Argument Mapping

The study (Van Gelder , 2007) mentioned that argument mapping allows the presentation of new scientific material in a way in which the student can build on the existing knowledge in order for meaningful learning to occur, which allows for efficient learning integrated with the information stored in memory. The study (Heinle, 2003) added that argument maps allow us to visualize the logical structure of discussion and argument. The study (Davies M., 2011) emphasized the possibility of grouping the mapping tools together (concepts, mind and argument), as long as each of them has functions that complement each other. The mind map represents a linking tool, while the concept mapping provides a method to clarify the relationships, while the argument map focuses on maps of inferential structures and logical connections.

In addition, the same study (Alvarez 2011) showed that it was possible to present all the advantages and disadvantages of establishing a water desalination plant in Lake Victoria by using the argument map. The same study also clarified the factors affecting the level of effectiveness of teaching accounting and marketing in the faculty of economics and management at the University of Melbourne. (Philips F. 2013) study focused on answering the effectiveness of two methods, namely, Reading Case Responses and using Argument maps in improving the results of analyzes experienced by accounting students through three hypotheses. The results showed an increase in the intellectual abilities of accounting student's .Also, the study (Rapants D. and Walton D. 2016) showed that argument maps has become a subject of research in education since it supports student interactions and increases the effectiveness of learning processes. In addition, the study (Alvarez and Maria 2007) showed that objective evidence about the skills must be required to operate argument maps based on critical thinking skills.

(6-1-3-3) Example on increasing, decreasing, or stabilizing the interest rate.

One of the most obvious examples of argument maps is what was presented (Martin D. et al. 2011) when presenting opinions in favor of increasing, decreasing, or stabilizing the interest rate by the central bank in a certain country, explaining the possible economic effects on all sectors.

(6-1-3-4) A Summary of the differences between the three maps

The following schedule summarize the main differences between the three maps (Davies W. M. 2011):

Kind of Map	The purpose	The Structure	The level of Abstract	The Nodes	Linking Devices	Linking Words
Mind mapping	To Increase ideas, topics and things	Nonlinear , Radial, and Organic	very general	Picture, words and shapes	Lines, thickness, line, colors, shading	Words Links colors, and
Concept Mapping	relationships and concepts	Hierarchy is like a tree	Average general	Boxes	Arrows	Links statements
Argument mapping	Make inferences and support	Hierarchy is like a tree	Less general	Boxes and lines	Lines, colors, shading	Link Words, References

Schedule (1)

Based on the data included in the previous schedule, it is noticed that the mind map is characterized as being non-linear, and it is an idea that was monitored in the middle of the paper, radiating from it many non-linear lines of different thicknesses and colors. It is also very general and uses different lines, colors and shapes.

While the concept mapping, it is generally hierarchical and average, and squares are used in its preparation, arrows are linked between them, and a set of appropriate linking expressions.

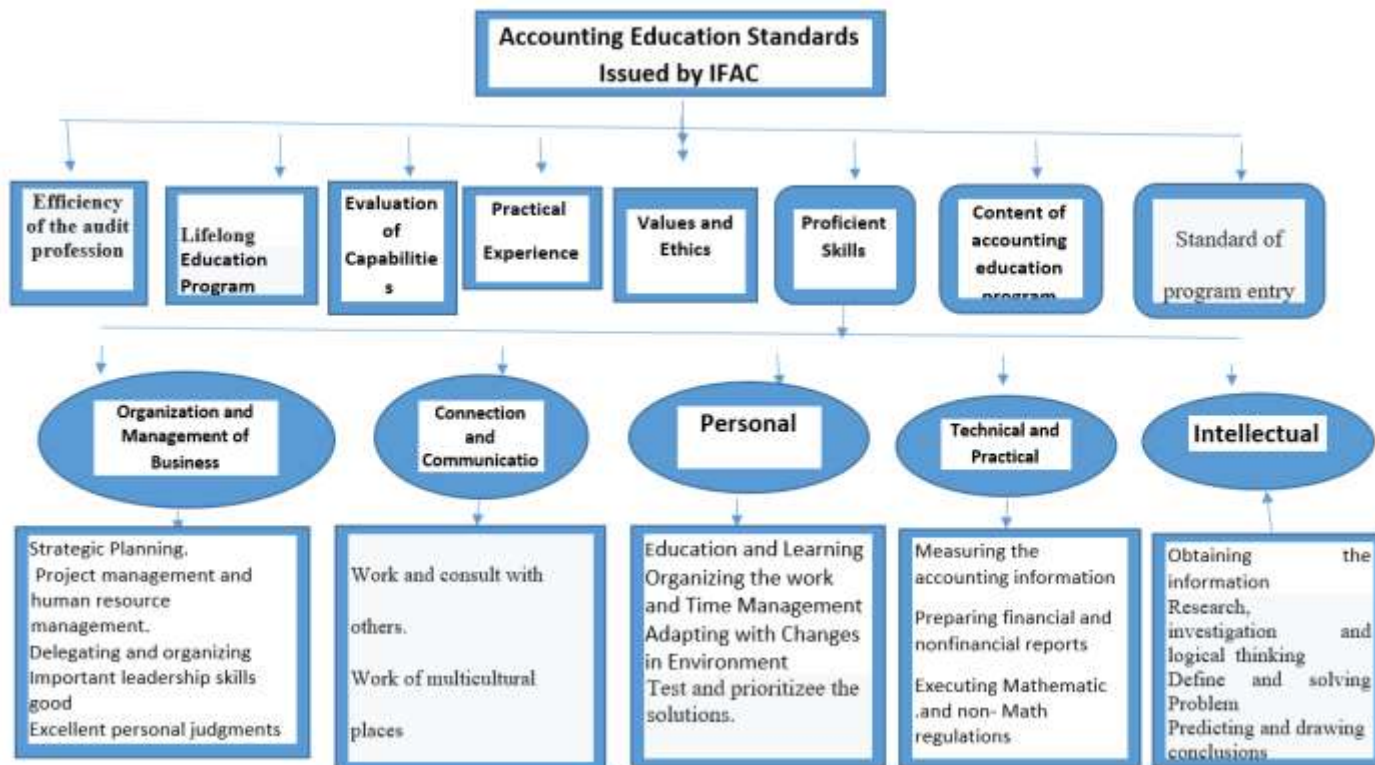
The map of argument or discussion shows inferences and interpretations, as it is hierarchical and has a high specificity or a low degree of generality. Squares, lines, colors, shading and linking words are used in its preparation.

(6-2) A summary of the technical skills that accountants should acquire in accordance with International Standard No. (3) Issued by the International Federation of Accountants.

The subject of accounting education has not received sufficient attention, from either an academic or a practical point of view. As the studies and research conducted in that field are still very limited, as they are individual in nature, and joint studies have not been conducted between academics and major companies similar to studies that are conducted in developed countries. As long as it requires time, effort, cost and support from the responsible authorities.

(6-2-1) a summary of professional skills, which are issued by the International Federation of Accountants.

International Standard No. 3 is concerned with the necessary professional skills, which are required to be available for accountants when practicing the accounting profession. This standard is one of the eight standards adopted by the International Federation of Accountants. We will present those criteria, with focus on the criterion of interest.



The previous form shows that the third standard of accounting education standards, which were issued by the International Federation of Accountants, the standard, is among the eight standards according to the latest development. The third standard is of interest, which deals with the five professional skills required for graduates: intellectual skills, technical and practical skills, personal skills, connections and communication skills, organizational skills and business management. In addition, each of the five previous professional skills is divided into five other sub-skills.

(6-2-2) a Summary of Accounting Education

The main objective of accounting education is to graduate qualified graduates for work, who have the knowledge and skills that enable them to carry out the work assigned to them.

The elements of accounting education include both inputs (students who can be qualified for the accounting exercise), operations (learning methods and tools to provide students with knowledge and skills), and outputs (qualified graduates) in addition to feedback (evaluation processes by employers).

(6-3) Field study and analysis of results

Based on the analysis of the previous studies, a comparative analysis, not a narrative, In addition to presenting the eight standards adopted by the International Federation of Accountants, and in light of the focus on the third standard of the five professional skills (intellectual, technical and practical, personal, communication and connections, organization and business management), A number of hypotheses will be formulated.

(6-3-1) Research population and sample

The population of research consisted of the members of faculties in accounting departments ($85 \times 40\% = 34$ member nearly), and from the graduates ($163 \times 40\% = 65$ member nearly). Then, the total number of sample is 58 members.

(6-3-2) the Nature of Questionnaire

Study Appendix No. (1) Represents a set of questions directed to the research sample to inquire about the impact of the advanced tools (whether it is a concept mapping, mind mapping, argument map) on the five professional skills (intellectual, technical and practical, personal, communication, organizational and business management).), which

were mentioned in the International Standard for Accounting Education, which was issued by the National Federation of Accountants. In this regard, the study used the five-point Likert scale, where the points were given as follows:

Answer	Totally Agree	Agree	Neutral	Refuse	Totally Refuse
Point	5	4	3	2	1

Schedule (3)

(6-3-3) Results Analysis

(6-3-3-1) the Distribution of Questionnaire:

The following schedule shows the distribution of the questionnaire list among the sample members:-

Data	No. of faculties in acc. Dep .and their assistances		Graduate students	
	number	%	number	%
distributed questionnaires	34	100	65	100
Corrected questionnaires received	31	91.2%	52	80%
Questionnaires not received	3	%8.8	13	20%

Schedule (4)

(6-3-3-2) The Demographic Characteristics of the Study Sample Members:

(It was also possible to analyze the demographic characteristics of the study sample members:

No	Data		No. of faculties in acc. Dep .and their assistances		Graduate student	
	Age	category	No.	%	No.	%
1		20-35 Y	10	32.3%	41	81.5%
		35-45 Y	6	19.4%	5	18.5%
		45-60 Y	9	28.9%	4	0%
		More 60	6	19.4%	2	0%
2	sex	Male	20	64.5%	32	74.1%
		Female	11	22.2%	20	25.9%
3	qualification	Bachelor	15	48.4%	50	88.9%
		diploma	0	00.0%	2	00.0%
		Master	8	25.8%	0	00%
		PHD	8	25.8%	0	00%
4	years of experience	1-3	2	6.5%	8	15.4%
		3-8	15	48.3	36	69.2%
		8-15	6	19.4%	4	7.7%
		More 15	8	25.8%	4	7.7%

Schedule (5)

(6-3-3-3) the Stability (Reliability) and Validity of Questionnaire

Regarding the **reliability** of the questionnaire list, it is found that in the case of graduate students and using Cronbach's alpha coefficient, it is 0.825, and in the case of the accounting faculty members 0.863, the matter indicates the stability of the questionnaire form. The validity coefficient of the postgraduate students' form reached 0.91 and in the case of faculty members, it reached 0.93. This means that the questions set belong to the same target variables and not to another variable.

(6-3-3-4) Descriptive Metrics and Parametric Test

(a) Statistic for Postgraduate students

The Scale	The Target Professional Skills				
	Intellectual (x1)	Technical and Practical (x2)	Personal (x3)	Communications and Confections (x4)	Organizational and Management (x5)
Average	4.4952	4.25000	4.4183	4.3462	4.2885
St. Deviation	0.38822	0.70189	0.41927	0.42919	0.53409

Schedule (6)

(a) © The Relative Importance of Five Professional Skills Statistic for faculty members and their Assistances

The Scale	The Target Professional Skills				
	Intellectual (x1)	Technical and Practical (x2)	Personal (x3)	Communications and Confections (x4)	Organizational and Management (x5)
Average	4.5161	4.2823	4.4387	4.3290	4.4194
St. Deviation	0.43749	0.59771	0.48282	0.35981	0.42518

Schedule (7)

, which belong Sample of Post-graduate students, faculty members, and their Assistances:-

The Relative Importance	The Target Professional Skills				
	Intellectual (x1)	Technical and Practical (x2)	Personal (x3)	Communications and Confections (x4)	Organizational and Management (x5)
Postgraduate students	90%	85%	88%	87%	86%
faculty members and their Assistances	90%	86%	89%	87%	88%

Schedule (8)

(6-3-3-5) One Sample T-Test

The objective of this test is to test the hypotheses of the study by inferring about the mean of the statistical population. It also aims to point out that the relationships between the variables of the study are real, and not due to chance. This is done by comparing the calculated and tabulated T value. Where the results are accepted if the calculated T value is greater than the tabulated value, that is, the sample is representative of the study population.

(6-3-3-5-1) at the case of Post Graduate:-

One Sample T –Test

95% Confidence Interval of the Difference		Mean Difference	Sig. (2-tailed)	df	T the calculated	The variable X
Upper	Lower					
1.6033	1.3871	1.49519	0.000	27	27.773	

Schedule (9)

(6-3-3-5-1) at the case of Faculty Members and Assistance:-

One Sample T –Test

95% Confidence Interval of the Difference		Mean Difference	Sig. (2-tailed)	df	T the calculated	The variable X
Upper	Lower					
1.56604	1.22816	1.39710	0.000	18	17.3984	

Schedule (10)

The previous two schedules (9) and (10) show that the probabilistic value in both (p -value= 0.000), It is less than 5%, and therefore the null hypothesis is rejected and the alternative hypothesis, which is the research hypothesis, is accepted.

The results of Mann- Whitney Test also showed that there are no fundamental differences between the results of the two samples of graduate students, faculty members and their assistants as the appendix (11) shows:-

Sample	N	Mean Rank	Sum of Ranks
1	31	43.86	2280.50
2	52	38.89	1205.50
Total	83		

Schedule (11)

Appendix No. (2) Attached at the end of the study shows the frequency table of the results obtained for the preferences of the two samples, whether from faculty members in the accounting departments or from graduate students in them. According to the five-point Likert scale.

(6-4) Conclusion and recommendations

(6-4-1) Conclusion

- (1) Accounting education is one of the main pillars on which the development of accounting and auditing depends in theory and practice. It has also become the prevailing and accepted strategy locally, regionally and internationally. This strategy is based on student-based learning, not the lecturer. This strategy also rejects memorization and memorization, as well as meaning-based learning.
- (2) Accounting education in Palestine has not received sufficient attention, whether academically or practically. Research, studies and efforts conducted in this field are still very limited, they are individual in nature, and joint studies have not been conducted between academics, civil society institutions and operating companies similar to studies in developed countries.
- (3) The third standard of the eight standards issued by the International Federation of Accountants includes the need for accountants and students to acquire professional skills that have been subdivided into five skills: - intellectual, technical and practical, personal, communication, organizational skills and business management.
- (4) The shift from traditional education to active learning, from rote education to awareness, requires a response to the advanced tools, as concept mapping, mind mapping, and argument mapping.
- (5) The empirical studies in the accounting courses in which the three advanced tools were used showed great success compared to the traditional approach.
- (6) The study included a definition and an objective for each of the three tools developed in the learning process:-
 - (6-1) **Concept mapping** are means of representing the relationships between different ideas, images, and words. It is used in planning, teaching, summarizing, evaluating courses, knowing students' ability to understand and comprehend concepts.
 - (6-2) **Mind Mapping** presents a scheme that includes a group of ideas, functions, or things that are connected and organized in the form of a single basic idea.
 - (6-3) **Argument Mapping** The main objective of preparing these maps is to arrive at an explanatory structure for the discussions. These maps depend on the colors, shading, and thickness of the lines. It is considered less general than the two types that were given.
- (7) The field study conducted by the researcher showed the agreement of each of the categories of faculty members in the accounting departments and their assistants, in addition to graduate students towards the effectiveness of the tools developed from the three maps, and that their application will raise the levels of performance.

- (8) Studies in the field of accounting education revealed the existence of an expectation gap between what employer's desire of professional skills for accountants and graduate students and what they actually acquire. The researcher justifies this gap by not containing what is encouraged by university regulations and student density.

(6-4-2) Recommendations

- (1) The research recommends the need for the councils of the faculties of administrative and financial sciences to adopt an educational plan for faculty members and their assistants that is related to the newly developed learning tools and methods, which include concept maps, mental maps, and dialectical maps. In addition, these courses are considered among the courses necessary for the promotion of faculty members and assistants.
- (2) The research recommends the necessity of treatment the expectations gap between the skills required for faculty members, their assistants and professional accountants and skills planned within the standards of the International Federation of Accountants on the one hand, and their actual skills on the other hand. Consequently, accountants and auditors associations and interested accounting associations undertake the necessity of holding educational courses as a requirement to obtain professional certificates.
- (3) The need for a real and fruitful activation of the field training programs for students, which are already, included in the student teaching regulations.
- (4) The research recommends the necessity of Preparing and activating simplified explanations for students, both within university literature, and during lectures and research rooms. It is within this range that the recommended maps can be used.
- (5) The research recommends the necessity of finding practical solutions to student density, whether you find this problem in lecture halls or in classrooms.

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Appendix (1)

Questionnaire List

My fellow faculty members and their assistants, my sons graduate students. (Dear fellow faculty members, their assistants and graduates)

After Greetings...

The research aims to demonstrate the impact of strengthening the accounting education processes with advanced tools that lecturers resort to increase the effectiveness of student learning. The three tools includes :-

- (1) Concept Mapping. A way to represent the relationships between different ideas, images, and words. Therefore, it is used in the field of teaching, summarizing and evaluating courses.
- (2) Mind Mapping. A scheme involves a group of ideas, functions, or things that are communicated and organized into a single basic idea.
- (3) Argument Mapping. Ts goal is to arrive at an explanatory structure for the discussions and depends on the tools of color, shading, and line thickness.

The International Accounting Education Standard (3) deals with the necessity of accounting education for students to acquire professional skills that include 5 skills: intellectual, technical and practical, personal, communication, organizational and business management.

The researcher hopes that you will express an opinion about the impact of supporting accounting education with these advanced tools on the five sub-professional skills separately. Of course, your answer represents to us a great appreciation for scientific research and is subject to complete confidentiality.

The following is a set of questions that were directed to the sample items and related to the inquiry about the impact of applying the advanced three tools on each of the five sub-skills that constitute professional skills:

- (1) The effect of strengthening accounting education with concept, mental, and argument maps on the students' skill (intellectual skill):

The effect on intellectual skill	Totally accept	Accept	Natural	refuse	Totally refuse
Obtaining information from its source and organizing, and understanding it.					
Research, analysis and logical thinking.					
Defining and solving complex problems.					
Decision making and practice relevant judgment ,					
Forecasting and reaching results.					

schedule (12)

- (2) The effect of strengthening education with concept, mental, and argument maps on the students' skill (technical and practical skill):

The effect on technical and practical skill	Totally accept	Accept	Natural	refuse	Totally refuse
Measuring accounting and non-accounting information.					
Preparing financial and non-financial documents.					
Conducting math and statistic operations ,					
Enhancing information technology ,					
Risk Analysis.					

Schedule (13)

- (3) The effect of strengthening accounting education with concept, mental, and argument maps on the students' skill (personality skill):

The effect on personality skill	Totally accept	Accept	Natural	refuse	Totally refuse

Self-Learning and Self-Management.					
Organization of Work and Respect Time.					
Adapting with Changes in Business environment.					
Choosing the priorities in limited resources.					
The effect on Values and professional stations.					

Schedule (14)

(4) The effect of strengthening accounting education with concept, mental, and argument maps on the students' skill (communication and connection skill):

The effect on communication and connection skill.	Totally accept	Accept	Natural	refuse	Totally refuse
Working consultations with others to avoid the obstacles and solving it.					
Working in multicultural reigns.					
Display and discussion of views, defense and report effectively.					
Negotiating on accepted solutions.					
Lessening and writing effectively.					

Schedule (15)

(5) The effect of strengthening accounting education with concept, mental, and argument maps on the students' skill (organizational and Business management)

The effect on communication and connection skill.	Totally accept	Accept	Natural	refuse	Totally refuse
Carry out the strategic planning process					
Projects and human Resources Management and Decision Making.					
Organize and delegate tasks to motivate and develop human resources.					
Possess leadership skills.					
Good discernment when issuing personal judgments.					

Schedule (16)

Appendix (2)

(1)Frequent schedule of skills for faculty members and their assistants(intellectual)

intellectual			Technical & practical			Personality			Communication & connection			Organization &Org. Business		
Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%

1	0	0	1	0	0	1	0	0	1	0	0	1	0	0
2	0	0	2	0	0	2	2	6.5	2	0	0	2	0	0
3	2	6.5	3	0	0	3	0	0	3	0	0	3	0	0
4	10	32.2	4	14	45.2	4	9	29	4	16	51.6	4	12	38.7
5	19	61.3	5	17	54.8	5	20	64.5	5	15	38.7	5	19	61.3
To.	31	100	To.	31	100	To.	31	100	To.	31	100	To.	31	100

Schedule (17)

(2) Frequent schedule of skills for faculty members and their assistants(Technical & practical)

intellectual			Technical & practical			Personality			Communication & connection			Organization & Org. Business		
Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%
1	0	0	1	0	0	1	0	0	1	0	0	1	0	0
2	2	6.5	2	0	12.9	2	0	0	2	0	0	2	2	6.5
3	0	0	3	4	54.8	3	4	12.9	3	3	9.6	3	2	6.5
4	9	29	4	17	0	4	19	61.3	4	16	5.2	4	17	54.8
5	20	64.5	5	10	0	5	20	25.8	5	12	85.2	5	10	32.3
To.	31	100	To.	31	100	To.	31	100	To.	31	100	To.	31	100

Schedule (18)

(3) Frequent schedule of skills for faculty members and their assistants(Personality)

intellectual			Technical & practical			Personality			Communication & connection			Organization & Org. Business		
Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%
1	0	0	1	0	0	1	0	0	1	0	0	1	0	0
2	0	0	2	0	0	2	2	6.5	2	0	0	2	0	0
3	4	12.9	3	0	0	3	0	0	3	0	0	3	0	0
4	12	38.7	4	14	45	4	9	29	4	16	51.6	4	12	38.7
5	15	48.4	5	17	55	5	20	64.5	5	15	48.4	5	19	61.3
To.	31	100	To.	31	100	To.	31	100	To.	31	100	To.	31	100

Schedule (19)

(4) Frequent schedule of skills for faculty members and their assistants(communication & connection)

intellectual			Technical & practical			Personality			Communication & connection			Organization & Org. Business		
Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%
1	0	0	1	0	0	1	0	0	1	0	0	1	0	0
2	0	0	2	0	0	2	2	6.5	2	0	0	2	0	0
3	2	6.5	3	0	0	3	0	0	3	0	0	3	0	0
4	10	32.2	4	14	45.2	4	9	29	4	16	51.6	4	12	38.7
5	19	61.3	5	17	54.8	5	20	64.5	5	15	48.4	5	19	61.3
To.	31	100	To.	31	100	To.	31	100	To.	31	100	To.	31	100

Schedule (20)

(5) Frequent schedule of skills for faculty members and their assistants(Organization & business organization)

intellectual			Technical & practical			Personality			Communication & connection			Organization & Org. Business		
Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%
1	0	0	1	0	0	1	0	0	1	0	0	1	0	0
2	0	0	2	0	0	2	2	6.5	2	0	0	2	0	0
3	2	6.5	3	0	0	3	0	0	3	0	0	3	0	0
4	10	32.2	4	14	45.2	4	9	29	4	16	51.6	4	12	48.7
5	19	61.3	5	17	54.8	5	20	64.5	5	15	48.4	5	19	61.3
To.	31	100	To.	31	100	To.	31	100	To.	31	100	To.	31	100

Schedule (21)

(6) Frequent schedule of skills for Graduate students (intellectual)

intellectual			Technical & practical			Personality			Communication & connection			Organization & Org. Business		
Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%
1	0	0	1	0	0	1	2	3.8	1	0	0	1	0	0
2	0	0	2	0	0	2	0	0	2	0	0	2	0	0
3	2	3.8	3	1	1.9	3	16	30.8	3	4	7.7	3	5	9.6
4	6	11.5	4	24	46.2	4	23	44.2	4	28	53.8	4	23	44.2
5	44	84.7	5	27	51.9	5	11	23.2	5	20	39.5	5	24	48.2
To.	31	100	To.	31	100	To.	52	100	To.	52	100	To.	52	100

Schedule (22)

(7) Frequent schedule of skills for Graduate students (Technical & practical)

intellectual			Technical & practical			Personality			Communication & connection			Organization & Org. Business		
Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%
1	0	0	1	0	0	1	0	0	1	0	0	1	0	0
2	0	0	2	0	0	2	0	0	2	0	0	2	0	0
3	8	15.8	3	15	28.8	3	12	23.1	3	4	7.7	3	28	6.5
4	12	23.1	4	14	26.9	4	25	48.1	4	33	63.5	4	17	54.8
5	32	61.5	5	23	44.2	5	15	28.8	5	15	28.8	5	21	32.3
To.	52	100	To.	52	100	To.	52	100	To.	52	100	To.	52	100

Schedule (23)

(8) Frequent schedule of skills for Graduate students (Personality)

intellectual			Technical & practical			Personality			Communication & connection			Organization & Org. Business		
Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%
1	0	0	1	0	0	1	0	0	1	0	0	1	0	0
2	1	1.9	2	2	0	2	0	0	2	0	0	2	0	0
3	3	5.8	3	1	0	3	3	5.8	3	4	7.7	3	14	26.9
4	17	32.7	4	11	45	4	29	55.8	4	33	63.5	4	17	32.7
5	31	59.6	5	38	55	5	20	38.5	5	15	28.8	5	21	40.4
To.	52	100	To.	52	100	To.	52	100	To.	52	100	To.	52	100

Schedule (24)

(9) Frequent schedule of skills for Graduate students (communication & connection)

intellectual			Technical & practical			Personality			Communication & connection			Organization & Org. Business		
Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%
1	0	0	1	0	0	1	0	0	1	0	0	1	0	0
2	0	0	2	0	0	2	1	1.9	2	1	1.9	2	0	0
3	4	7.7	3	7	13.5	3	7	13.5	3	3	5.8	3	10	19.2
4	13	25.0	4	23	47.2	4	24	46.2	4	27	51.9	4	22	42.3
5	35	61.3	5	22	43.3	5	20	38.5	5	20	38.5	5	20	38.5
To.	52	100	To.	52	100	To.	52	100	To.	52	100	To.	52	100

Schedule (25)

(10) Frequent schedule of skills for Graduate students (Organization & business organization)

intellectual			Technical & practical			Personality			Communication & connection			Organization & Org. Business		
Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%	Dr.	Fre.	%
1	0	0	1	0	0	1	0	0	1	0	0	1	0	0
2	1	1.9	2	0	0	2	0	0	2	1	1.9	2	0	0
3	4	7.7	3	13	25.0	3	10	19.2	3	0	0	3	7	13.5
4	18	34.6	4	14	26.9	4	25	48.1	4	31	59.6	4	24	46.2
5	29	55.8	5	25	48.1	5	17	32.7	5	20	38.5	5	21	40.3
To.	52	100	To.	52	100	To.	52	100	To.	52	100	To.	52	100

Schedule (26)

