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The Free Mind Software and Its Impact on the Design of Mental Maps

Susy Karina Dávila Panduro[1], Lita Macedo Torres[2], Linda Priscilla López Alvarado[3], Rafael Vásquez Alegría[4], Rodolfo Gaslac Galoc[5], Carlos Antonio Li Loo Kung[6]

[1],[6] Doctores en Educación por la Universidad Alas Peruanas, Perú

[1],[2],[3],[4],[5]Docente del departamento de Práctica Pre Profesionales de la Facultad de Ciencias de la Educación y Humanidades de la Añadir Universidad Nacional de la Amazonia Peruana. Perú

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Abstract

The objective of the research was to apply FreeMind software to optimize the use of mental maps in fifth-level students of UNAP, in 2019, to provide a computer tool for didactic use without any cost for its use in legal form, and in this way improve in the students who are in their last level of studies, their motivation in classes. The research was experimental and its design was the pre-experimental type: Pre-test and post-test design with a single group. The population of the present study was made up of the students of the Professional School of Engineering in Food Industries, of the Faculty of Food Industries of the National University of the Peruvian Amazon; and of the Specialties of: Social Sciences, Language and Literature, Natural Sciences, Foreign Languages and Mathematics and Computer Science of the Faculty of Education Sciences of the National University of the Peruvian Amazon, and a total of 60 students. The technique used to collect the information was the survey and the instrument the questionnaire. The R i386 computerized statistical package version 3.6.0 for Windows 7/8/10 was used to process the data, thus obtaining the data matrix to organize the data in tables and graphs. For the analysis and explanation of the data, the parametric inferential statistical test t-student (t) was used, where tc = 46.60 was obtained; tt = 1,885; observing that tc> tt accepting the hypothesis: The application of FreeMind software produces a statistically significant improvement in the use of mental maps in fifth-level students of UNAP, in the year 2019. It was obtained as a result that: of 60 (100%) students, who thought about the Design of Mind Maps before the application of FreeMind Software, 20.9% of students thought that it is good, 45.7% of students thought that is regular and 33.3% of students thought that it is deficient; on the other hand, they thought about the Design of Mind Maps after the application of FreeMind Software, 79.8% of students thought that it is good and 20.2% of students thought that it is regular, where it can be observed that there is a positive difference between both moments (pre-test and post-test).

Keywords: Free Software, Free mind, Mind Map, Motivation

Introduction

The universities have entered, for many years ago, in a great competition to achieve academic excellence, much more in the current moments where universities make all their effort to achieve their institutional licensing and demonstrate the basic quality conditions required by SUNEDU to all the universities of Peru; There is, therefore, a requirement of permanent reengineering, that universities be managed with a vision of orderly and quality organizations, but most importantly, there is a huge challenge for those who invest in higher university education.

Many times only the traditional is defended, however, many times we forget the characteristics that define an activity as innovative. Within the teaching function, in what corresponds to the activities carried out by the teacher in the classroom, a group of strategies is put into play for students to develop their skills. In fact, for an activity to be considered innovative, it has to meet some requirements, such as: creativity, intentionality, being original and usable, among others. (López, 2005).

Considering the above, it can be said that the activities of the teachers are still generally very similar, what can really change is the way and the application that the teacher gives in his classroom at the moment that the execution is carried out and fundamentally it is From that we can say if the teacher is traditionalist or not. On the other hand, students learn to summarize and manage information that is relevant to them, this is done by applying various types of visual organizers, one of them are mind maps, which are of great importance and functionality by the way they shape to a topic and facilitate your understanding.

The traditional way of applying it is good, but it can be improved by applying software for its design; a software that facilitates its creation, give a better presentation, make them faster and with good quality and facilitate that these products can be disseminated to other students or apply a forum to make them known and not leave them in oblivion once the classes within from the classroom. (Gonzales, 2009). FreeMind software is a program that allows the development of mind maps and is published under the GNU General Public License. (free); It is very useful to perform the analysis and ordering of data, information or ideas, usually generated in classroom work teams, because with this system it is possible to design mental maps and upload them to the network (publish them on the internet) as pages web (in html format). Like other mind mapping software, FreeMind has the function of editing a group of ideas in hierarchical

Corresponding Author: Carlos Antonio Li Loo Kung
Doctor en Educación por la Universidad Alas Peruanas, Perú. Docente del departamento de Ingeniería de Alimentos de la Facultad de Industrias Alimentarias de la Universidad Nacional de la Amazonia Peruana. Perú **E-mail:** carlosli22@hotmail.com

form, accommodating around an idea that is placed in the center. The National University of the Peruvian Amazon cannot be left out of this reality or apart from the new technology that exists in the market, science and technology has a continuous advance especially to the computerized, even more when they can be obtained without any cost (free software) and enhance the use of the installed infrastructure that already exists in the university, in this way give greater emphasis to the classes in the university classrooms, thus achieving to improve the levels of quality in teaching and a Easy to use tool for designing a visual organizer in your daily work.

Materials and Methods

The research belongs to the experimental design because the independent variable was deliberately manipulated: FreeMind software, with the objective of analyzing its effect on the dependent variable: use of mind maps, consisted of administering a stimulus and then determining the degree to which the variable manifests dependent (Velasquez & Rey, 2001).

The population of the present study was made up of the fifth level students of the School of Food Industry Engineering, of the Faculty of Food Industries of the National University of the Peruvian Amazon; and of the Specialties of: Social Sciences, Language and Literature, Natural Sciences, Foreign Languages and Mathematics and Computer Science of the Faculty of Education Sciences of the National University of the Peruvian Amazon, which will be 60 students. The sample was made up of 100% of the population, that is, a census sample design was applied.

The technique used was the survey, which allowed the instrument to be applied to the selected sample. And the instrument I used was: the questionnaire to measure the two variables.

Results and Discussion

Table 1: Perception of FreeMind Software, according to indicators, in students at UNAP, Iquitos - 2019.

Perception of Freemind Software According to Indicators	Professional Schools											
	Food Industries		Social Sciences		Language and Literature		Natural Sciences		Foreign Languages		Mathematics and Informatics	
	Good	Regular	Good	Regular	Good	Regular	Good	Regular	Good	Regular	Good	Regular
1. How do you consider the ease of access to the software?	100.0%	0.0%	92.9%	7.1%	75.0%	25.0%	100.0%	0.0%	66.7%	33.3%	100.0%	0.0%
2. How do you perceive the Information Protection System?	88.9%	11.1%	92.9%	7.1%	66.7%	33.3%	83.3%	16.7%	75.0%	25.0%	85.7%	14.3%
3. How do you consider the confidentiality of the data entered?	77.8%	22.2%	85.7%	14.3%	75.0%	25.0%	83.3%	16.7%	66.7%	33.3%	85.7%	14.3%
4. How do you consider how to present the cognitive evaluation?	88.9%	11.1%	85.7%	14.3%	66.7%	33.3%	83.3%	16.7%	58.3%	41.7%	85.7%	14.3%
5. How would you rate the level of clarity in the use of the software?	88.9%	11.1%	78.6%	21.4%	75.0%	25.0%	100.0%	0.0%	66.7%	33.3%	100.0%	0.0%
6. How would you rate the creation and management of mind maps?	100.0%	0.0%	85.7%	14.3%	75.0%	25.0%	100.0%	0.0%	75.0%	25.0%	100.0%	0.0%
7. How do you perceive the suitability for the use of the software?	88.9%	11.1%	92.9%	7.1%	83.3%	16.7%	83.3%	16.7%	66.7%	33.3%	85.7%	14.3%
8. How do you rate the requirements for software installation?	77.8%	22.2%	78.6%	21.4%	58.3%	41.7%	83.3%	16.7%	66.7%	33.3%	85.7%	14.3%
9. How do you consider compatibility with installed operating systems?	66.7%	33.3%	78.6%	21.4%	41.7%	58.3%	83.3%	16.7%	58.3%	41.7%	85.7%	14.3%
Average	86.4%	13.6%	85.7%	14.3%	68.5%	31.5%	88.9%	11.1%	66.7%	33.3%	90.5%	9.5%

Source: Obtained by the authors

Table 2: Summary of the perception of FreeMind Software, according to Professional Schools, in students at UNAP, Iquitos - 2019.

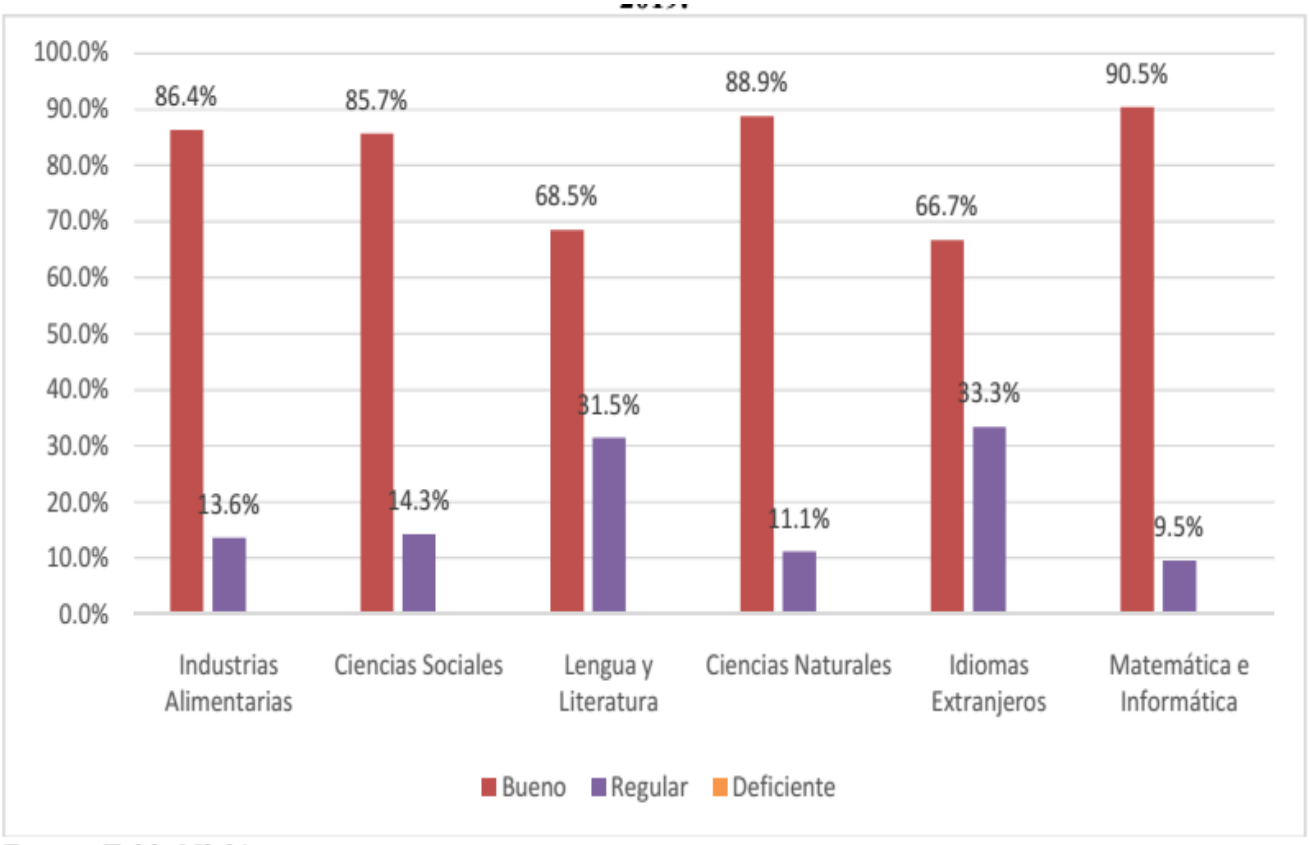
Perception of Freemind Software in Students According to Specialties	Good		Regular		Deficient	
	N	%	N	%	N	%
Food industries	7.8	86.4%	12	13.6%	0·0	0·0%
social Sciences	12·0	85.7%	2·0	14.3%	0·0	0·0%
Language and literature	8.2	68.5%	3.8	31.5%	0·0	0·0%
natural Sciences	5.3	88.9%	0.7	11.1%	0·0	0·0%
Foreign languages	8·0	66.7%	4·0	33.3%	0·0	0·0%
Mathematics and Computer Science	6.3	90.5%	0.7	9.5%	0·0	0·0%
Average	7.9	81.1%	2.1	18.9%	0·0	0·0%

Source: Table No. 01

Table 1 and 2 shows the distribution of the Perception indicators of FreeMind Software, in students of the Professional School of UNAP, Iquitos - 2019 and is the following:

Of 60 (100%) students in total, it is necessary that, in the Professional School of Food Industries, 86.4% of students thought that it is good, 13.6% of students thought that it is regular, in the Professional School of Social Sciences, 85.7% of students thought that it is good, 14.3% of students thought that it is regular, in the Professional School of Language and Literature, 68.5% of students thought that it is good, 31.5 % of students thought that it is regular, in the Professional School of Natural Sciences, 88.9% of students thought that it is good, 11.1% of students thought that it is regular, in the Professional School of Foreign Languages, 66, 7% of students thought that it is good, 33.3% of students thought that it is regular, in the Professional School of Mathematics and Computer Science, 90.5% of students thought that it is good, 9.5% of students thought that it is regular.

Figure 1: Perception of FreeMind Software, in Students According to Professional School at UNAP, Iquitos - 2019.



Source: Table No. 01

Table 3: Perception of the Design of the Mind Map before the application of the FreeMind Software, in students of fifth level of the UNAP, Iquitos - 2019.

Perception of the Mental Map Design before the Application of the Freemind Software	Good		Regular		Deficient		Total	
	N	%	N	%	N	%	N	%
1. How do you consider your student readiness to use computer systems?	12	20.0%	29	48.3%	19	31.7%	60	100%
2. How do you conceive the quality of work?	5	8.3%	29	48.3%	26	43.3%	60	100%
3. How do you evaluate the management of connectors on the mind map?	13	21.7%	28	46.7%	19	31.7%	60	100%
4. How do you evaluate the insertion of images in the mind map?	13	21.7%	26	43.3%	21	35.0%	60	100%
5. How do you evaluate the inclusion of content in the mind map?	14	23.3%	24	40.0%	22	36.7%	60	100%
6. How do you evaluate time in mind map design?	15	25.0%	25	41.7%	20	33.3%	60	100%
7. How do you evaluate how to distribute the mind map?	13	21.7%	28	46.7%	19	31.7%	60	100%
8. How do you evaluate how to publish the mind map?	12	20.0%	29	48.3%	19	31.7%	60	100%
9. How is your general appreciation of the work with the mind map?	16	26.7%	29	48.3%	15	25.0%	60	100%
Average	12.6	20.9%	27.4	45.7%	20·0	33.3%	60	100%

Source: Obtained by the authors

Table 3 shows the distribution of the Perception of the Mind Map Design indicators before the application of the FreeMind Software, in fifth-level students of UNAP, Iquitos - 2019 and is as follows:

Of 60 (100%) students, who expressed their opinion on the indicator:

How do you consider your students' readiness to use computer systems ?, 12 (20.0%) students thought it was good, 29 (48.3%) students expressed their opinion which is regular, 19 (31.7%) students thought that it is deficient, on the indicator:

How do you think the quality of work ?, 5 (8.3%) students thought that it is good, 29 (48.3%) students thought that it is regular, 26 (43.3%) students thought that it is deficient, about the indicator:

How do you evaluate the management of connectors on the mind map ?, 13 (21.7%) students thought that it is good, 28 (46.7%) students thought that it is regular, 19 (31.7%) students thought that it is deficient, about the indicator:

How do you evaluate the insertion of images in the mental map ?, 13 (21.7%) students they thought that it is good, 26 (43.3%) students thought that it is regular, 21 (35.0%) students thought that it is deficient, about the indicator:

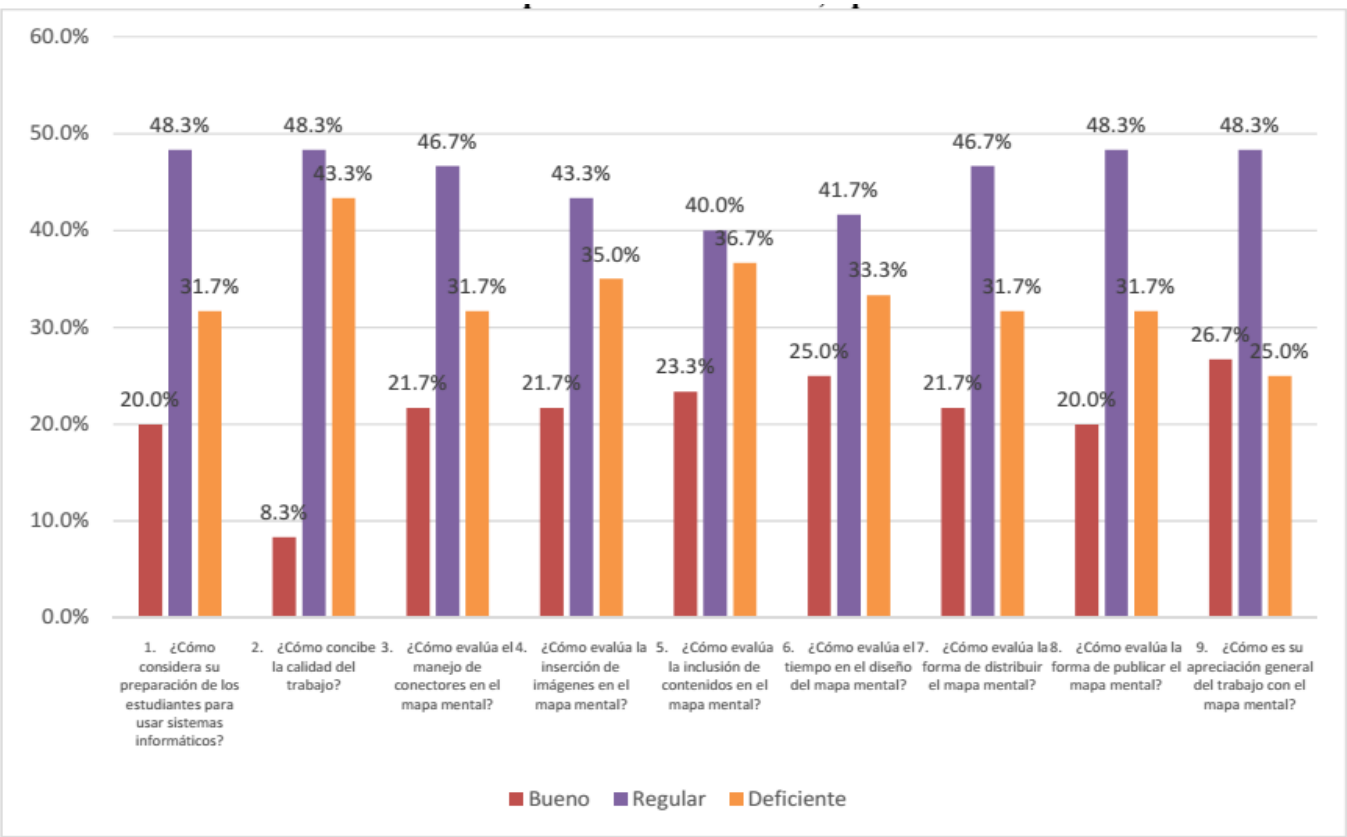
How do you evaluate the inclusion of and contained in the mind map ?, 14 (23.3%) students thought it was good, 24 (40.0%) students thought it was fair, 22 (36.7%) students thought it was poor, about the indicator :

How do you evaluate the time in the design of the mental map ?, 15 (25.0%) students thought that it is good, 25 (41.7%) students thought that it is regular, 20 (33.3%) students thought that It is deficient, on the indicator:
How do you evaluate the way of distributing the mind map ?, 13 (21.7%) students thought it was good, 28 (46.7%) students thought it was regular, 19 (31.7 %) students thought that it is deficient, about the indicator:

How do you evaluate the way of publishing the mental map ?, 12 (20.0%) students thought that it is good, 29 (48.3%) students thought that it is regular, 19 (31,7%) students felt that it is deficient, on the indicator:

How is your overall appreciation of working with the mental map?, 16 (26.7%) students said it's good, 29 (48.3%) students felt it is regular, 15 (25.0%) students felt it is deficient.

Figure 2: Perception of the Design of the Mind Map before the application of FreeMind Software, in fifth-level students of UNAP, Iquitos - 2019.



Source: Table No. 02

Table 4: Perception of the Design of the Mind Map after the application of FreeMind Software, in fifth-level students of UNAP, Iquitos - 2019

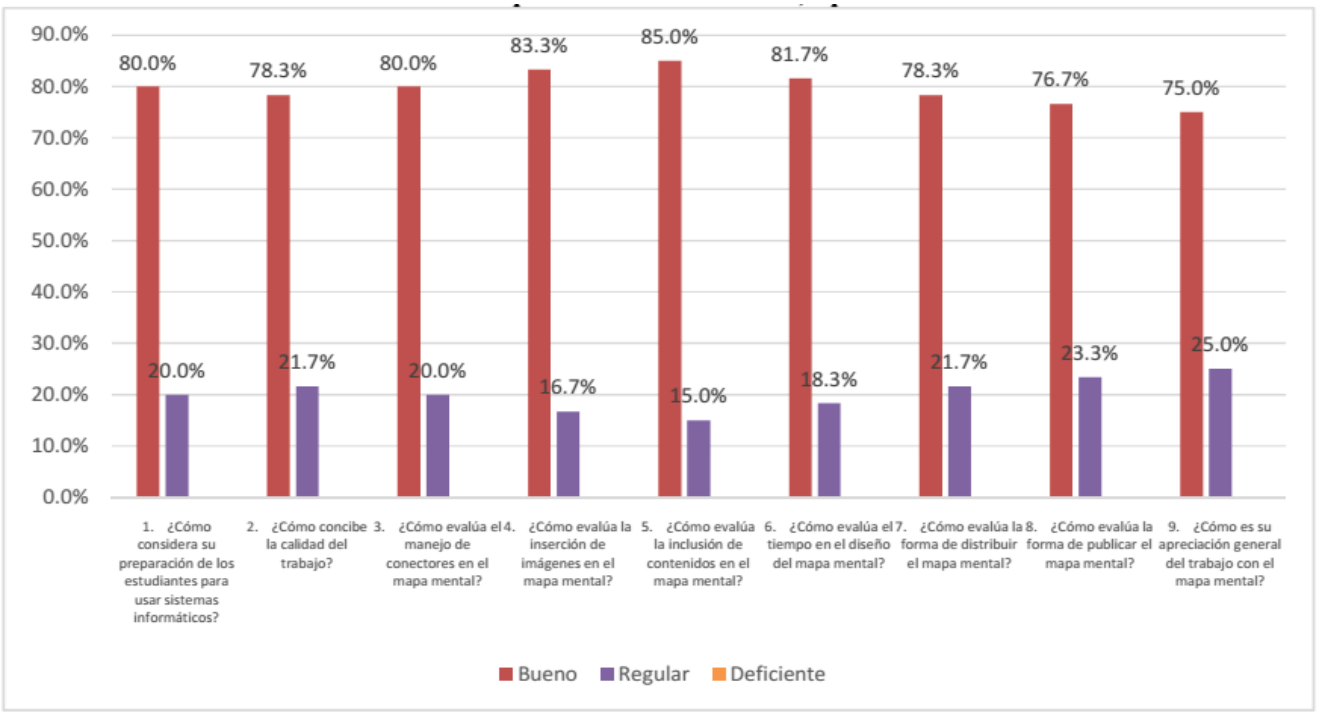
Perception of the Mental Map Design after the Application of the Freemind Software	Good		Regular		Deficient		Total	
	N	%	N	%	N	%	N	%
1. How do you consider your student readiness to use computer systems?	48	80.0%	12	20.0%	0	0.0%	60	100%
2. How do you conceive the quality of work?	47	78.3%	13	21.7%	0	0.0%	60	100%
3. How do you evaluate the management of connectors on the mind map?	48	80.0%	12	20.0%	0	0.0%	60	100%
4. How do you evaluate the insertion of images in the mind map?	50	83.3%	10	16.7%	0	0.0%	60	100%
5. How do you evaluate the inclusion of content in the mind map?	51	85.0%	9	15.0%	0	0.0%	60	100%
6. How do you evaluate time in mind map design?	49	81.7%	11	18.3%	0	0.0%	60	100%
7. How do you evaluate how to distribute the mind map?	47	78.3%	13	21.7%	0	0.0%	60	100%
8. How do you evaluate how to publish the mind map?	46	76.7%	14	23.3%	0	0.0%	60	100%
9. How is your general appreciation of the work with the mind map?	45	75.0%	15	25.0%	0	0.0%	60	100%
Average	47.9	79.8%	12.1	20.2%	0	0.0%	60	100%

Source: Obtained by the authors

Table No. 04 shows the distribution of the Perception of the Mind Map Design indicators after the application of the FreeMind Software, in fifth-level students of UNAP, Iquitos - 2019 and is the following: Of 60 (100%) students, who expressed their opinion on the indicator: How do you consider your students' readiness to use computer systems ?, 48 (80.0%) students thought it was good, 12 (20.0%) students expressed their opinion which is regular, about the indicator: How do you conceive the quality of work ?, 47 (78.3%) students thought it is good, 13 (21.7%) students

thought it is regular, about the indicator: How do you evaluate the management of connectors on the mind map ?, 48 (80.0%) students thought that it is good, 12 (20.0%) students thought that it is regular, About the indicator: How do you evaluate the insertion of images in the mind map ?, 50 (83.3%) students thought that it is good, 10 (16.7%) students thought that it is regular, about the indicator: How do you evaluate the inclusion of contents in the mental map ?, 51 (85.0%) students thought that it is good, 9 (15.0%) students thought that it is regular, about the indicator: How do you evaluate the time in the design of the map Mental ?, 49 (81.7%) students thought that it is good, 11 (18.3%) students thought that it is regular, about the indicator: How do you evaluate how to distribute the mental map ?, 47 (78.3 %) students thought that it is good, 13 (21.7%) students thought that it is regular, about the indicator: How do you evaluate the way of publishing the mental map ?, 46 (76.7%) students thought that it is good, 14 (23.3%) students thought that it is regular, on the indicator: How is your general appreciation of the work with the mental map ?, 45 (75.0%) students thought that it is good, 15 (25.0%) students felt that it is regular.

Figure 3: Perception of the Design of the Mind Map after the application of FreeMind Software, in fifth-level students of UNAP, Iquitos - 2019.



Source: Table No. 04

When analyzing the distribution of the indicators of the perception of the design of the mind map before the application of the FreeMind Software, in fifth-level students of the UNAP, Iquitos - 2019, it was found that of 60 (100%) students, that they thought about the design of the mental map before the application of FreeMind Software, 45.7% of respondents thought that it is regular, this is because the students consider that the use of important mind maps as a study technique and To summarize your topics, but when you do it in the classic and conventional way such as using paper or making a file on a computer using a word processor, it is not the best thing to optimize your work. As outstanding information about the perception of mind map design before of the FreeMind Software application, it was found that: on the indicator: How do you consider your students' readiness to use computer systems ?, 29 (4 8.3%) students thought that it is regular, about the indicator: How do you conceive the quality of work ?, 29 (48.3%) students thought that it is regular, about the indicator: How do you evaluate the management of connectors in the mental map ?, 28 (46.7%) students thought that it is regular, on the indicator: How do you evaluate the insertion of images in the mental map ?, 26 (43.3%) students thought that it is regular, on the indicator : How do you evaluate the inclusion of contents in the mind map ?, 24 (40.0%) students thought that it is regular, about the indicator: How do you evaluate the time in the design of the mind map ?, 25 (41.7%) students thought that it is regular, about the indicator: How do you evaluate the way of distributing the mind map, 28 (46.7%) students thought that it is regular, about the indicator: How do you evaluate how to publish the mind map? , 29 (48.3%) students thought that it is regular, about the indicator: How is your general appreciation of the work with the mind map? , 29 (48.3%) students thought that it is regular, in summary it can be affirmed that the majority of students indicate that the work was done on a regular basis, these data coincide with those reported by (Apaza, 2017), where children and girls of the 4th grade of the primary level of the EI “Father Eloy Arribas Lázaro”, managed to improve the indicators proposed for each level of understanding and that there are significant differences in the understanding of expository texts, after using the conceptual maps with the application of the XMind software, noting that the initial work was not poor, but could be improved.

When analyzing the distribution of the indicators Perception of FreeMind Software, in students of the Professional Schools of UNAP, Iquitos - 2019, it was found that of 60 (100%) students, it is necessary to, in the Professional School of Industries Alimentary, 86.4% of students thought that it is good, in the Professional School of Social Sciences, 85.7% of students thought that it is good, in the Professional School

of Language and Literature, 68.5% of students they thought that it is good, in the Professional School of Natural Sciences, 88.9% of students thought that it is good, in the Professional School of Foreign Languages, 66.7% of students thought that it is good, in the Professional School of Mathematics and Computer Science, 90.5% of students felt that it is good, this is because students are aware that the use of computer technology tools, are very useful for various fields of knowledge, these data you agree with what was reported by (Herrera, 2017), where students of the 1st grade of the secondary level of the EI "Cristo Rey", in 92.3%, indicate that the use of the FreeMind free program, serves to improve the understanding of written texts, that is why they consider it a very useful and easy to use tool.

When analyzing the distribution of the indicators of the perception of the design of the mind map after the application of the FreeMind Software, in fifth-level students of the UNAP, Iquitos - 2019, it was found that of 60 (100%) students, Who thought about the design of the mind map after the application of FreeMind Software, 79.8% of respondents thought that it is good, this is because the whole use of mind maps using FreeMind software, has caused great impact In the students, seeing how a task that at the time is very tedious in its elaboration becomes something easy and fast to be able to achieve with a high quality of presentation and with a greater baggage of tools (icons) to be able to better illustrate the product final.As outstanding information about the perception of the design of the mind map after the application of FreeMind Software, it was found that: on the indicator: How do you consider your preparation Ion of students to use computer systems ?, 48 (80.0%) students thought that it is good, on the indicator: How do you think the quality of work ?, 47 (78.3%) students thought that it is good, about the indicator: How do you evaluate the management of connectors on the mind map ?, 48 (80.0%) students felt that it is good, on the indicator: How do you evaluate the insertion of images on the mind map ?, 50 (83, 3%) students thought that it is good, about the indicator: How do you evaluate the inclusion of contents in the mind map ?, 51 (85.0%) students thought that it is good, about the indicator: How do you evaluate the time in the design of the mental map ?, 49 (81.7%) students thought that it is good, about the indicator: How do you evaluate the way to distribute the mental map ?, 47 (78.3%) students thought that it is good, about the Indicator: How do you evaluate the way of publishing the mental map ?, 46 (76.7%) students thought that it is good, about the indicator: How is your apr General eciation of the work with the mental map ?, 45 (75.0%) students thought that it is good, these data coincide with the reporter by (Fernandez, 2018), where with the technological support of the XMimd Software, it was improved by 85 , 4%, the levels of learning in the José Carlos Mariátegui de Cauday educational institution.

When performing the inferential analysis by applying the parametric inferential statistical test t-student (t), tc = 46.60, tt = 1,885, gl = 2, $\propto$ = 1%, that is, tc> tt was accepted, accepting the main hypothesis: The application of FreeMind software produces a statistically significant improvement in the use of mental maps in fifth-level students of UNAP, in the year 2019, a result that coincides with what was reported by (Arevalo, 2015), in their research work on use of visual and graphic organizers as a strategy for learning in the 6th grade students of the primary level at Capouilliez College, where he managed to fulfill his goal: to demonstrate that the use of these visual and graphic organizers contributes to achieving better meaningful learning.

Conclusions

Free educational softwares are currently in high demand for all schools at all levels as they allow students to improve some learning activity without any cost of copyright, therefore, by validating FreeMind software for improvement in The design of mental maps in fifth-level students contributes to improving the educational levels and preparation of future professionals for society.

The university is provided with a new valid and reliable tool for use in the chairs where its application is necessary and in this way and gradually contribute to the growth of scientific knowledge especially if these are for the good of the educational system and society in their set.

The perception of the design of the mind map before the application of the FreeMind Software, in fifth-level students of UNAP, Iquitos - 2019, was regular in 45.7% of the total students surveyed, this is because the students they consider that the use of important mind maps as a study technique and to summarize their subjects, but when performing it in the classical and conventional way such as using paper or making a computer file using a word processor is not the best thing to optimize his work.

The perception of FreeMind Software, in UNAP students, Iquitos - 2019, was good at 81.1% of the total number of students organized by the professional schools studied and it is because students are aware that the use of technological tools informatics, are very useful for the various fields of knowledge.

The perception of the design of the mind map after the application of FreeMind Software, in fifth-level students of UNAP, Iquitos - 2019, was good in 79.8% of the total students surveyed, this is because the whole The use of mind maps using FreeMind software, has caused great impact on students to see how a task that at the time is very tedious in its development becomes something easy and fast to achieve with a high quality of presentation and with a larger baggage of tools (icons) to better illustrate the final product.

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