

# The incident critical as tool for recertify the specialty pediatric.

## El incidente crítico como herramienta para recertificar la especialidad pediátrica.

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**Summary:** The practice of the medical profession in our specialty requires from those who perform it a profile of adequate competencies that include knowledge, skills, attitudes and values. The critical incident (CI) is a structured narrative in which the professional relates an event that occurred in their daily medical activity that generates impact, doubts, motivating actions and reflections that improve their professional development. In 2021, the IC was incorporated into the recertification process. Objectives: describe the results of the CI carried out in the recertification process, the factors associated with its approval and evaluate whether the CI is an appropriate tool to include in this process. Methodology: descriptive analytical cross-sectional study. Results: 11 CI (73%) were approved; The most frequent reason for choosing the CI was not reaching the score to recertify (73%). Age: median 52 years (IQR 49 to 58); 100% were women; 48% were trained in specialized hospitals and the time to recertification was 120 months (IQR 96 to 122). Domain of knowledge: 14% adequately developed the clinical scenario and 13% the research question, and 20% made a complete summary. Mastery of doing: 35% implemented appropriate strategies; 13% developed relevant strategies-effectors and only 7% carried out complete bibliographic searches in their action plan. Mastery of reflective learning: results inherent to the patient (33%) and the professional (20%) carried out an appropriate comprehensive approach; In the final reflections, 13% adequately developed the strengths and 15% the weaknesses in relation to the clinical case presented. Conclusions: The approved CIs corresponded to those professionals who achieved a comprehensive approach to the patient and their problem, closely related to having achieved adequate reflective learning. Based on these results, we could assume that the IC could be an appropriate tool to include in the recertification process. No statistical association was found between the investigated variables and the approval of the IC.

**Keywords:** Critical incident; recertification process; medical judgment

**Resumen:** La práctica de la profesión médica en nuestra especialidad requiere de aquellos que la desempeñan un perfil de competencias adecuadas que incluyen conocimientos, habilidades, actitudes y valores. El incidente crítico (IC) es una narración estructurada en donde el profesional relata un suceso ocurrido en su actividad médica diaria que le genera impacto, dudas motivando acciones y reflexiones que mejoran su desarrollo profesional. En el año 2021, se incorporó el IC al proceso de recertificación. Objetivos: describir los resultados de los IC realizados en el proceso de recertificación, los factores asociados con su aprobación y evaluar si el IC es una herramienta adecuada para incluir en este proceso. Metodología: estudio descriptivo analítico de corte transversal. Resultados: 11 IC (73%) fueron aprobados; la causa más frecuente de elección del IC fue no alcanzar el puntaje para recertificar (73%). Edad: mediana 52 años (RIC 49 a 58); el 100% fueron mujeres; 48% se formó en hospitales especializados y el tiempo a la recertificación fue de 120 meses (RIC 96 a 122). Dominio del conocimiento: el 14% desarrolló adecuadamente el escenario clínico y 13% la pregunta de investigación y 20% realizó un resumen completo. Dominio del hacer: el 35%

implementó estrategias adecuadas; el 13% desarrolló estrategias-efectores pertinentes y solo el 7% realizó búsquedas bibliográficas completas en su plan de acción. Dominio del aprendizaje reflexivo: resultados inherentes al paciente (33%) y al profesional (20%) realizaron un enfoque integral adecuado; en las reflexiones finales desarrollaron adecuadamente las fortalezas el 13% y el 15% las debilidades en relación con el caso clínico presentado. Conclusiones: Los IC aprobados correspondieron a aquellos profesionales que lograron un enfoque integral del paciente y su problema, en estrecha relación con haber alcanzado un adecuado aprendizaje reflexivo. En función de estos resultados podríamos asumir que el IC podría ser una herramienta adecuada para incluir en el proceso de recertificación. No se encontró asociación estadística entre las variables investigadas y la aprobación del IC.

**Palabras clave:** Incidente crítico; proceso de recertificación; criterio médico

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## 1. Introduction

The practice of the medical profession in the specialty of Pediatrics requires an adequate profile of competencies from those who perform it. Numerous factors have modified the conditions that frame current professional practice, determining the need to incorporate new learning, information and knowledge that make up continuous medical training, thus generating effective and safe medical decisions that will result in benefits for the patient. These competencies are evaluated through periodic certification and recertification, both processes being voluntary.

The Argentine Society of Pediatrics (SAP) through its Professional Evaluation Council (CEP), created in 1967, carries out professional certifications and, since 2004, recertifications in pediatrics and pediatric subspecialties. The recertification process takes into account professional background grouped into four areas: healthcare activity; medical, teaching and academic education; corporate activity and quality in professional practice (1).

The critical incident (CI) is a structured narrative in which a unique event that occurred in the professional's daily medical practice is recounted in writing that impacts them, generating doubts, perplexity and that motivates actions and reflections that strengthen their professional development (2). . In 2021, the critical incident (CI) was incorporated into the area of quality of professional practice as a new tool to be used in recertification and which, in turn, provides points for said process (3).

The primary objective was to evaluate whether the critical incident is an appropriate tool to include in the recertification process in pediatrics. The secondary objectives were to describe the results obtained in the CIs carried out during the recertification process and to evaluate the possible factors associated with its approval.

## 2. Methods

A descriptive, analytical, cross-sectional study was carried out, which included all the CIs (n=15) prepared by the recertifying professionals of the pediatric specialty from January 2021 to September 2022. The CI consists of 5 items:

1. Clinical Scenario, where the professional describes the clinical problem, prioritizes data and proposes diagnoses.

2. Formulation of the question in PICO (4) format (population-intervention-comparison and results), defining the type of problem (diagnosis, prognosis, intervention, ethical), patient safety, doctor-patient-family relationship, difficult communication, accessibility difficulties to the health system and/or hospital structure.

3. Action plan and strategies: intervention - non-intervention, activities and strategies actively developed in order to resolve the situation that generated the IC; bibliographic searches (search strategies, keywords; databases and medical literature used), citing relevant literature in relation to the critical incident.

4. Results: inherent to the patient and the professional.

5. Final reflections: analysis of strengths, weaknesses, opportunities, threats (SWOT)(4). Each of these items is related to Medical Criteria (Annex 1).

The CI was previously validated through a pilot test carried out on a total of 25 professionals with the purpose of ensuring the understanding and adequate development of the instructions. This pilot test allowed modifications that improved the CI. From then on, this tool was made available to professionals who requested online recertification. To facilitate the process, instructions were attached where an example of CI and a bibliographic search tutorial were developed. In turn, a group of pediatric doctors who are members of the CEP of the SAP was formed to evaluate the CIs presented. Instructions were prepared and training sessions were held in order to unify criteria within the group.

An evaluation form was created for CIs structured in three domains, based on the knowledge that constitutes clinical reasoning (5, 7-8): knowing, doing and knowing how to be. In turn, each domain has items/dimensions that allow evaluating the different stages of the medical criterion construct (5-6). The following points were included in the knowledge domain:

- Development of the clinical scenario
- Data hierarchy (summary)
- Research Question (PICO)

The development of the clinical scenario, based on the interaction with the patient and the sum of the professional's knowledge and previous experiences, determines the appropriate construction of data, which must then be prioritized. The adequate development of this domain was assigned three points and allows measuring Stage I of Medical Criterion. The doing domain included:

- Strategies developed by the professional
- Strategies developed by other effectors
- Bibliographic searches and other resources that allow you to obtain more information and/or updates inherent to the patient's medical problem.

Stages II and III of Medical Criterion were evaluated based on the diagnostic approaches taken as hypotheses, according to the semiological findings. In this way, the means applied to verify the diagnostic hypotheses and the strategies aimed at modifying the natural evolution of the patient's problem were evaluated. This domain was awarded three points. In the domain of reflective learning (9,10) the following were included:

- Patient Inherent Outcomes
- Results inherent to the professional
- Final thoughts.

This domain allowed us to observe whether the professional was able to achieve a comprehensive approach to the patient and their problem, corresponding to Stage IV of the Medical Criterion construct, assigning a total of four points.

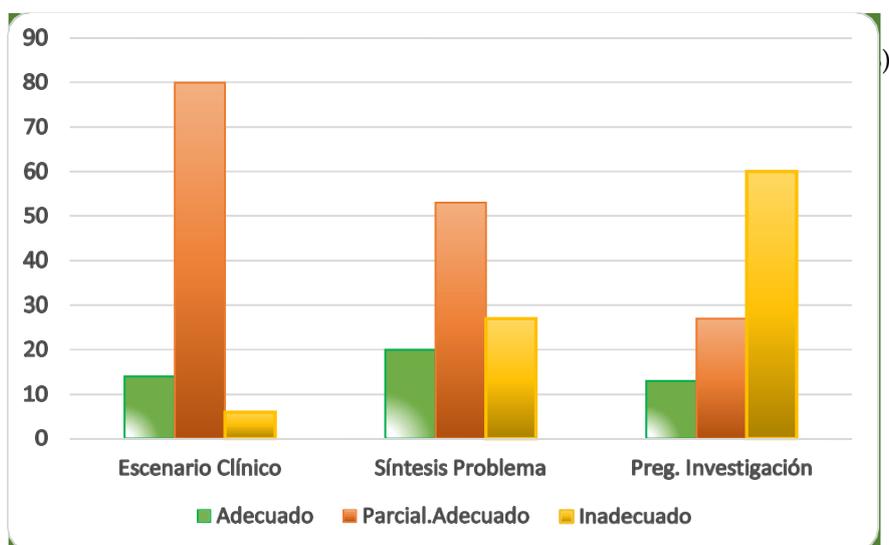
Each CI domain was assessed using three qualitative options: adequately developed (no need for correction), partially adequate (requires corrections), or inadequate (needs to be reworded). A maximum score of 10 was assigned, with a minimum of 7 points required to pass. The CI presented were evaluated first individually and then jointly by two members of the CEP. In order to guide and clarify doubts about the items, the corresponding feedback was made (tutoring).

#### *Statistic analysis.*

Continuous variables were expressed in median and interquartile ranges (IQR), given the non-normal distribution of the population, and categorical variables in percentages. The Pearson test and Fisher's exact test were used to compare proportions. For continuous data, the Wilcoxon test was used. A value of  $p < 0.05$  was considered significant.

### 3. Results

During the aforementioned period, the IC was used by 15 professionals, which represented 8% of the total recertification candidates. Of them, 11 (73%) were approved but required tutoring in this process. The lack of credits to recertify (73%) was the most frequent cause for presenting an IC. The median age was 52 years (IQR 49 to 58); with predominance of the female gender (100%); 48% were trained in specialized hospitals and the median time to recertification was 120 months (IQR 96 to 122). In the knowledge domain, 14% adequately developed the clinical scenario and 13% the research question, only 20% made an adequate summary (figure 1). The median final score obtained in this domain was 1 (IQR 0.5 to 1.5).



**Figure 1.** Results of the knowledge domain (%).

In the domain of doing, only 5 professionals out of 15 (35%) implemented adequate strategies; 13% developed relevant strategies-effectors and only 7% carried out complete bibliographic searches in their action plan (figure 2). The final score for this domain had a median of 1 (IQR 0.5 to 1.5).

In the domain of reflective learning (results inherent to the patient and the professional) only 33% and 20% respectively, carried out an adequate comprehensive approach to the patient.

In the final reflections, 13% and 15%, respectively, adequately developed the strengths and weaknesses, in relation to the clinical case presented (Figure 3). The final score achieved for this domain had a median of 2 (IQR 1.5 to 2).

We did not find a statistically significant association between the investigated variables (age, time elapsed to recertification, place of training) and the approval of the IC, probably related to a small sample size and a small number of events. The mean age was lower in those who passed the CI (mean  $50 \pm 2$  years vs.  $55 \pm 2$  years;  $p = 0.167$ ).

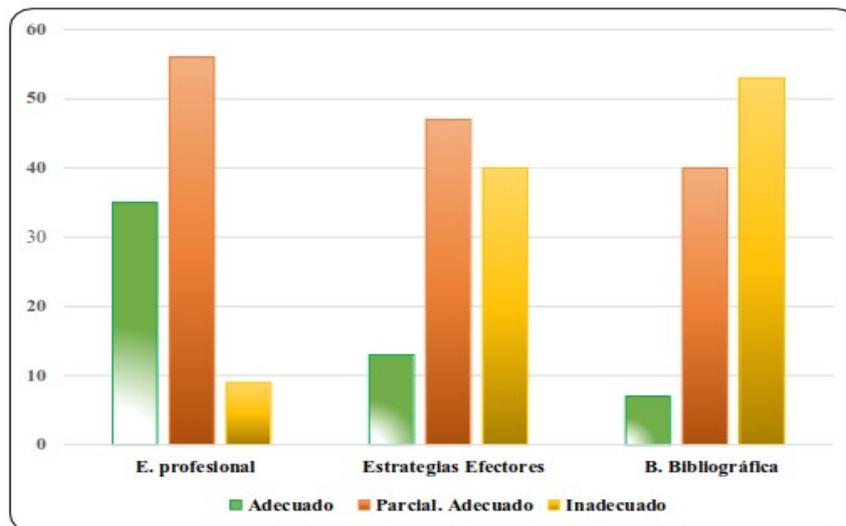


Figure 2. Results of Doing domain (%).

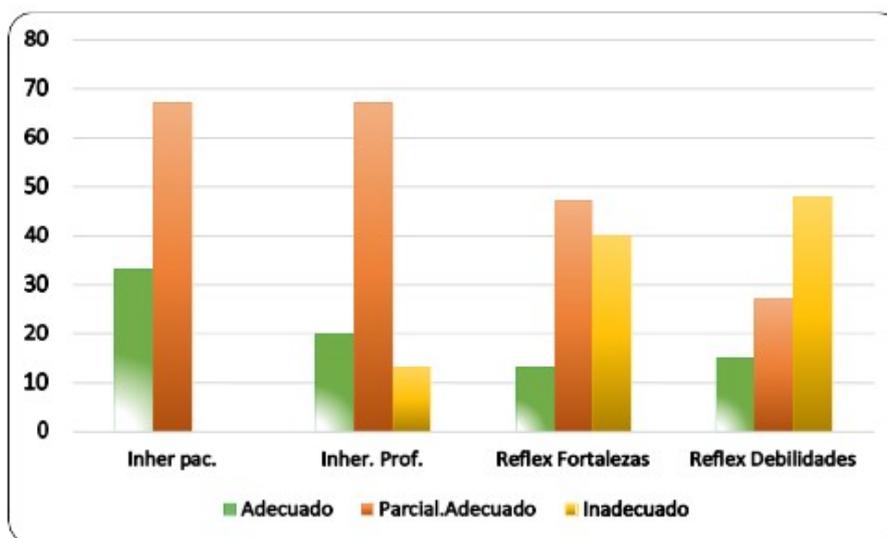


Figure 3. Results of Reflexive Learning domain (%).

#### 4. Discussion

The recertification process promotes the inclusion of the doctor in a continuous professional development program, which includes permanent updating activities, evaluates professional practice and its results. These actions train professionals with high standards of quality and safety in daily medical practice.

The critical incident has been used until now as a summative evaluation only during the residency training period (10). It was decided to include this tool in the recertification process, with the purpose of increasing the resources available in area four of the scale, facilitating the professional's access to said instance.

During the evaluated period, the CI was used by a small percentage (8%) of the recertifying professionals. The most frequent reason for opting for it was not having enough credits established in the scale.

Not knowing the availability of this resource, or having some difficulty in developing it, could partially justify the limited use of CI; Anticipating these instances, the working group designed facilitating tools and strategies (instructions, videos, tutorials and communication through the SAP website).

The lack of sufficient credits was the common denominator in the professionals who chose to present the IC to recertify. This situation could be related to the impossibility of maintaining adequate professional updating, possibly attributable to various factors: economic (cost of courses, conferences, bibliographic material, time availability), geographical (distance from training sites), epidemiological (consequences of the pandemic due to Covid) and technical (Internet access). This situation was reflected in the evaluation of the ICs presented.

In the domain of knowledge, the adequate resolution of the three dimensions evaluated was less than 20%, impacting the construction of the clinical scenario, the ranking of data and the questioning or questions posed by the problem case. (Medical Criterion I).

In the domain of doing, only 35% developed strategies inherent to the professional that were relevant. This impacted the construction of intervention plans, either individually or with other effectors, in order to achieve an appropriate resolution of the problem and complemented with an adequate bibliographic search. (Medical Criteria II and III).

In the domain of Reflective Learning, in the points related to the professional and the patient, only 20% and 30% respectively, achieved adequate development (Medical Criterion IV), which was observed in the final reflections, with a deficit in the focus. integral of the patient.

Among the characteristics of the group that performed a CI, we highlight that in the group that did not achieve sufficient score to recertify, the observed median age (52 years) and the length of professional practice (greater than 10 years) stand out. It would have been expected that these conditions would allow them to adequately develop the majority of the items corresponding to the different knowledge of clinical reasoning. However, this was not reflected in the results, given that the construction of the clinical scenario, data hierarchy, strategies, bibliographic search, final reflections and the comprehensive approach to the patient and his problem were incomplete, requiring guidance through tutorials for his proper development.

On the contrary, those who reached the level of approval expected from the IC were able to adequately analyze the proposed points of knowledge and clinical reasoning.

## 5. Conclusions

- The approved CIs corresponded to those professionals who achieved a comprehensive approach to the patient and their problem, this condition being related to having achieved the adequate development of reflective learning (knowing - being - clinical reasoning).
- Although we could not demonstrate a statistical association between the aforementioned variables and the approval of the IC, it is possible to assume based on these results that, despite the experience and knowledge acquired over time, professionals need to incorporate updated information, new learning and knowledge. that make for quality continuing medical training (Area 4).
- The CI could be an evaluation instrument to take into account among those used for recertifications in Pediatrics.

**Supplementary material:** Annex 1 (Critical Incident Form) and Annex 2 (Instructions for completing the Critical Incident form).

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**Author contributions :** Development and validation of the Critical Incident Instrument, all authors contributed. Methodology and statistical analysis. Dr Alicia Fayad MS. Discussion, conclusions and writing of the manuscript, all authors participated.

## References

1. Website of the Argentine Society of Pediatrics. [https://www.sap.org.ar/uploads/archivos/general/files\\_baremo-cep-06-23\\_1685706184.pdf](https://www.sap.org.ar/uploads/archivos/general/files_baremo-cep-06-23_1685706184.pdf)
2. Flanagan J. The Critical Incident Technique. *Psychological Bulletin*, 1954, 51(4): 327-58. <https://psycnet.apa.org/doi/10.1037/h0061470>
3. Morán Barrios J, Ruiz de Gauna P, Ruiz Lázaro PM, Calvo R. Complementary learning methodologies for the acquisition of competencies in the training of specialists and reliable professional activities. *Medical Education*, 2020, 21: 328-337. <https://doi.org/10.1016/j.edumed.2020.02.001>
4. Guyatt GH, Haynes R, Jaeschke RZ, et al. Users' Guides to the Medical Literature XXV. Evidence-Based Medicine: Principles for Applying the Users' Guides to Patient Care. Evidence-Based Medicine Working Group. *JAMA*, 2000, 284 (10): 1290-1296. <https://doi.org/10.1001/jama.284.10.1290>
5. Dresh S, Murno J, et al. Medical Criterion. Definition, process and evaluation (1st part). *Arch. Arg. of Pediatrics*, 1998, 96: 39-45. [https://www.sap.org.ar/docs/publicaciones/archivosarg/1998/98\\_39\\_45.pdf](https://www.sap.org.ar/docs/publicaciones/archivosarg/1998/98_39_45.pdf)
6. Dresh S, Murno J, et al. Medical Criterion. Definition, process and evaluation (2nd part). *Arch. Arg. of Pediatrics*, 1998, 96:108-120. [https://www.sap.org.ar/docs/publicaciones/archivosarg/1998/98\\_108\\_121.pdf](https://www.sap.org.ar/docs/publicaciones/archivosarg/1998/98_108_121.pdf)
7. Almendro Padilla C; Costa Alcaraz A. Red alert: the critical incident, learning from our mistakes. *Online teaching platform, Postgraduate Training*, 2006, 8: 1-8. <https://semfyc.eventszone.net/jornadas2019/uploads/docs/IncidenteCritico.pdf>
8. Rodríguez de Castro F, Carrillo-Díaz T, Freixinet-Gilart J, Julià-Serdà G. Clinical Reasoning. *FEM*, 2017, 20 (4): 149-160. <https://dx.doi.org/10.33588/fem.204.903>
9. Bruster BG, Peterson BR. Using critical incidents in teaching to promote reflective practice. *Reflective Practice: International and Multidisciplinary Perspectives*, 2013, 14 (2): 170-182. <https://doi.org/10.1080/14623943.2012.732945>
10. Saura Llamas J, Medina Abellán MA, Guirao Salina FA, Martínez Garra MN et al. How critical incidents affect Family and Community Medicine residents. *Rev. Clin. Med. Fam*, 2022, 15 (1): 20-27. [https://scielo.isciii.es/scielo.php?script=sci\\_arttext&pid=S1699-695X2022000100005](https://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1699-695X2022000100005)

**APPENDIX 1.**

**Critical Incident Form.** It consists of 5 items:

1. Clinical scenario. Critical Incident (CI) Description
2. Type of problem: intervention, diagnosis, prognosis, damage, ethical.
3. Action plan and strategies applied to solve the problem:
  - to. Developed by the professional
  - b. Developed by other effectors
  - c. Bibliographic search
  - d. PICO Research Question
4. Results
  - to. Inherent to the patient: positive-negative
  - b. Inherent to the professional: positive-negative
5. Final considerations. SWOT Reflections

**ANNEX 2. INSTRUCTIONS FOR PREPARING A CRITICAL INCIDENT. SEARCH TUTORIAL****1. Critical Incident. Instructions and Example for the Applicant**

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**2. Critical Incident. Literature search tutorial [https://www.sap.org.ar/uploads/archivos/general/files\\_tutorial-busqueda-biblio-cep-06-22\\_1655762066.pdf](https://www.sap.org.ar/uploads/archivos/general/files_tutorial-busqueda-biblio-cep-06-22_1655762066.pdf)**

The objective is to provide a guide that allows you to complete each of the items requested in the attached grid. It has a total of five items to complete.

- Clinical scenario. Description of the Critical Incident (CI): In this item the professional reports an unforeseen event (CI) experienced in his or her medical practice that acted as a trigger given the uncertainty and/or surprise generated by it, motivating certain actions and obtaining a certain result. The narration of this event must be clear, summarized and focused on all those aspects considered relevant to the situation that acted as a trigger (IC).
- Type of problem: intervention, diagnosis, prognosis, damage, ethical. For example: clinical situations related to therapeutic interventions, whether or not to give a drug? request certain diagnostic studies that allow confirming or ruling out disease (pre and post test probability); situations of children at risk (dysfunctional family, teenage parents, specific communities); interaction with other professionals or failures in health systems, etc.
- Action plan and strategies applied to solve the problem: Although the event is a spontaneous narration, this causes uncertainties and generates activities and strategies to resolve the situation that we call IC.
  1. Developed by the professional
    1. Request for complementary exams, laboratory studies, images, etc. o Interconsultations with colleagues, experts, reference centers
    2. Social service, community, legal medicine, ethics committee, others.
  2. Developed by other effectors
    1. Multidisciplinary team
    2. From the place to which it was derived
    3. Provincial/national Ministry of Health.
  3. Bibliography (present information sources): Search for relevant information in:
    1. Textbooks
    2. Electronic databases: How did you do it? What keywords did you use?

Other means used.

To evaluate these bibliographic search strategies, we propose the use of a methodological tool such as the acronym "PICO", which allows the research question to be formulated, which can also be saved, reproducible and evaluated.

**P:** includes **Patient** , **Population** , Problem that includes or includes their HF Intervention performed (diagnosis, therapeutic, prognosis, etc.)

**I : Intervention** I am going to do - therapeutic: medication; surgical; etc

**C : Comparison** of the new versus the known

**O :** (Outcome) o Expected **result** /benefit

It is remembered that there may be more than one type of problem within the same Incident and therefore each one is responsible for evaluation and development.

Remember that bibliographic citations have a specific structure when citing them: -Last name and initials of the authors' names, each author is separated by a comma. -Then title of the article.

-Magazine where it was published, followed by year; volume in parentheses followed by: number of pages. DOI.

- Results: The results obtained are described here:
  1. Inherent to the patient: positive-negative
  2. Inherent to the professional: positive-negative
- Final considerations. Reflections
  1. In simple terms, summarize in a summary those factors that allowed and/or facilitated achieving the proposed objectives and/or those that made them impossible (internal and external barriers-obstacles, strengths, weaknesses).
  2. Describe the learning experience you had, if you could explain whether or not it modified your professional actions, and what, in your opinion, were the notable positive influences of this event.
  3. You can summarize your experience by describing:
    1. The positive factors that allowed you to achieve the desired result
    2. The factors that were generated in your environment and made it easier for you to achieve the proposed objective
    3. The elements of its scope (internal problems) that constituted barriers to its actions.
    4. The negative elements, foreign to your environment, that made it difficult or prevented you from reaching your lived learning objective, if you could explain whether or not you modified your professional actions, and what were, in your opinion, the notable positive influences of this event.

You can summarize your experience by describing:

1. The positive factors that allowed you to achieve the desired result
2. The factors that were generated in your environment and made it easier for you to achieve the proposed objective
3. The elements of its scope (internal problems) that constituted barriers to its actions
4. The negative elements, foreign to your environment, that made it difficult or prevented you from reaching your goal



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