```
In [11]:  # Jupyter Notebook: analisis_recursos.ipynb

          # =====================================================
          # 0. Instalar dependencias
          # =====================================================

          %pip install pandas
          %pip install matplotlib
          %pip install seaborn
          %pip install numpy
          %pip install openpyxl
```

Requirement already satisfied: pandas in c:\users\user\appdata\local\package
s\pythonsoftwarefoundation.python.3.10_qbz5n2kfra8p0\localcache\local-packag
es\python310\site-packages (2.2.1)
Requirement already satisfied: numpy<2,>=1.22.4 in c:\users\user\appdata\loc
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l-packages\python310\site-packages (from pandas) (2024.1)
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ages\python310\site-packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
Note: you may need to restart the kernel to use updated packages.
[notice] A new release of pip is available: 24.3.1 -> 25.0.1
[notice] To update, run: C:\Users\user\AppData\Local\Microsoft\WindowsApps\P
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Note: you may need to restart the kernel to use updated packages.
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[notice] To update, run: C:\Users\user\AppData\Local\Microsoft\WindowsApps\P
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--upgrade pip

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cal-packages\python310\site-packages (from matplotlib!=3.6.1,>=3.4->seaborn)
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Requirement already satisfied: pytz>=2020.1 in c:\users\user\appdata\local\p
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ages\python310\site-packages (from python-dateutil>=2.7->matplotlib!=3.6.1,>
=3.4->seaborn) (1.16.0)
```

In [ ]:

```python
# analisis_distribucion_columas.ipynb

# ==========================================================
# 1. Importar librerías
# ==========================================================
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from collections import Counter

# Para que los gráficos se vean en el notebook
%matplotlib inline

# Configuración estética
sns.set(style="whitegrid", palette="muted", font_scale=1.1)

# ==========================================================
# 2. Cargar el archivo en un DataFrame
# ==========================================================

df_thetech = pd.read_excel("../Recursos/OutputEditado.xlsx")

# Combinando los DataFrames (si hubiera más de uno)
df = pd.concat([df_thetech], axis=0, ignore_index=True)

print("Filas y columnas:", df.shape)
df.head()
```

```
Filas y columnas: (247, 12)
```

Out[ ]:

	Filename	Name	Resource type	Values	comp
0	Tarjetas-Bebras-I.pdf	Desafío Bebras: Retos de Pensamiento Computaci...	Actividad enchufada	Fomento de la creatividad y del espíritu cient...	Com Li Con
1	Tarjetas-Bebras-Tanda-2.pdf	Desafío Bebras	Actividad desenchufada	Pensamiento crítico, Educación para la Salud, ...	Con Con Mat
2	Building_ai_education_ori_digital-2.pdf	Construyendo la Inteligencia Artificial para l...	Actividad enchufada, Curso	Fomento de la creatividad y del espíritu cient...	Con Con Mat
3	2023-Numero-la-rana_Guia-docentes.pdf	La rana que aprendió a contar	Programación visual	Fomento de la creatividad, Pensamiento crítico...	Con Con Mat
4	2024-Nuestro-Show-Programado-Guia-docentes.pdf	Nuestro Show programado	Programación visual, Curso	Fomento de la creatividad y del espíritu cient...	Com Li Con

In [13]:
```python
# ========================================================
# 3. Definir columnas a excluir del análisis
# ========================================================
exclude_cols = ["Filename", "Name", "URL"]
columns_to_analyze = [c for c in df.columns if c not in exclude_cols]

print("Columnas que se van a analizar:\n", columns_to_analyze)
```

Columnas que se van a analizar:
 ['Resource type', 'Values', 'Key competences', 'Knowledege areas', 'Cc conc
epts', 'Ct skills', 'Duration', 'School years', 'Languages']

In [14]:
```python
# ========================================================
# 4. Función para separar valores múltiples
# ========================================================
def split_multivalue(column_series):
    """
    Convierte strings con valores separados por comas en listas de valores.
    Ejemplo: 'Abstracción, Descomposición' -> ['Abstracción', 'Descomposició
    """
    # Reemplazamos NaN por cadena vacía para evitar errores al hacer split
    column_series = column_series.fillna("")

    # En cada fila se separan por comas y se limpian espacios
```

```
        splitted_lists = []
        for cell in column_series:
            # Separamos por comas
            parts = cell.split(",")
            # Eliminamos espacios sobrantes y cadenas vacías
            parts = [p.strip() for p in parts if p.strip() != ""]
            splitted_lists.append(parts)

        return splitted_lists
```

In [15]:
```
# =====================================================
# 5. Análisis de la distribución de cada columna
# =====================================================
for col in columns_to_analyze:
    # Parseamos la columna (por si tiene múltiples valores)
    list_of_lists = split_multivalue(df[col])

    # Unimos todo en una sola lista para contar frecuencias
    combined = []
    for items in list_of_lists:
        combined.extend(items)

    # Creamos el contador de frecuencia
    counter = Counter(combined)

    # Si una columna está realmente vacía (sin datos válidos), continuamos
    if not counter:
        print(f"\n[Columna '{col}'] No tiene datos o todos están vacíos.")
        continue

    # Imprimimos la distribución
    print(f"\n=== Distribución de la columna '{col}' ===")
    for key, count in counter.most_common():
        print(f"  {key}: {count} recurso(s)")

    # Representamos en un gráfico de barras si hay más de un valor
    if len(counter) > 1:
        plt.figure(figsize=(8, 4))
        plt.bar(counter.keys(), counter.values(), color="skyblue")
        plt.title(f"Distribución - {col}")
        plt.xlabel(col)
        plt.ylabel("Frecuencia")
        plt.xticks(rotation=45, ha="right")
        plt.tight_layout()
        plt.show()
    else:
        print("  (Solo existe un valor único en esta columna, sin gráfico.)"
```
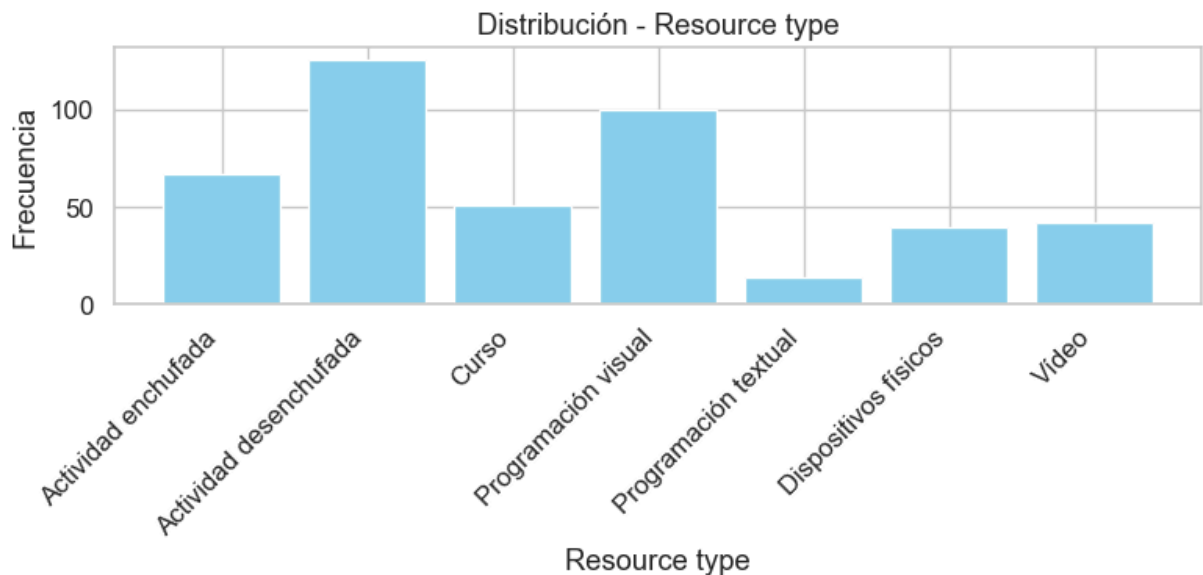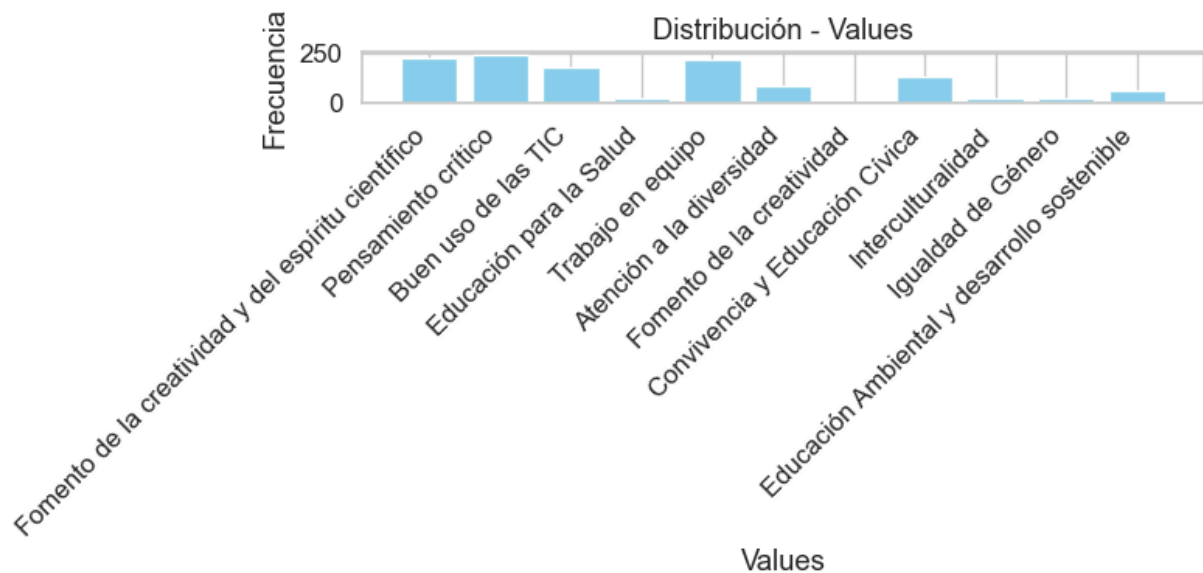
```
=== Distribución de la columna 'Resource type' ===
  Actividad desenchufada: 126 recurso(s)
  Programación visual: 100 recurso(s)
  Actividad enchufada: 67 recurso(s)
  Curso: 51 recurso(s)
  Vídeo: 42 recurso(s)
  Dispositivos físicos: 40 recurso(s)
  Programación textual: 14 recurso(s)
```
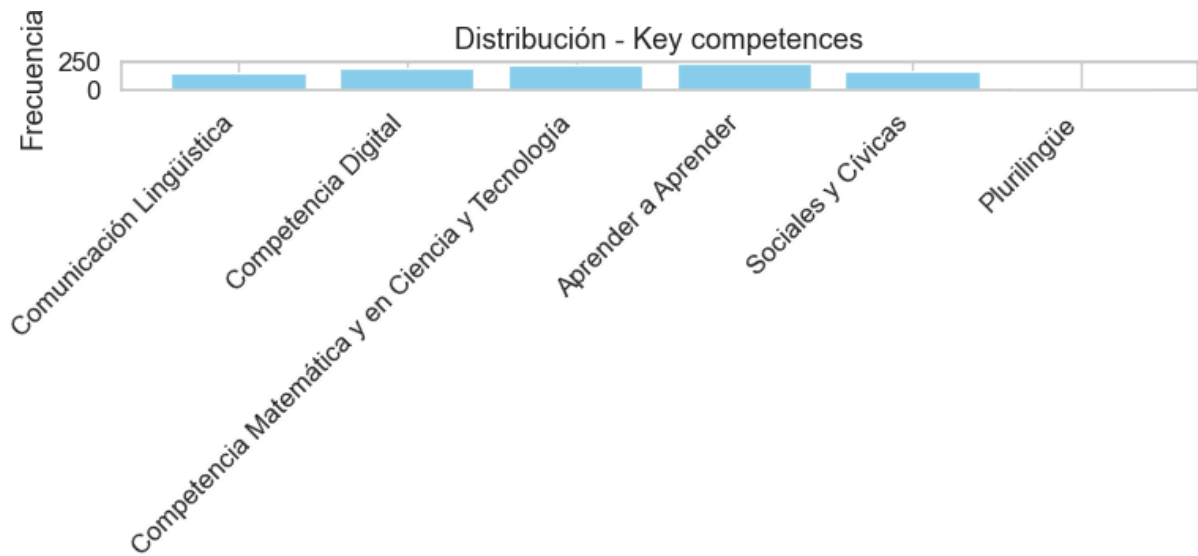
Distribución - Resource type

=== Distribución de la columna 'Values' ===
  Pensamiento crítico: 245 recurso(s)
  Fomento de la creatividad y del espíritu científico: 222 recurso(s)
  Trabajo en equipo: 218 recurso(s)
  Buen uso de las TIC: 177 recurso(s)
  Convivencia y Educación Cívica: 129 recurso(s)
  Atención a la diversidad: 86 recurso(s)
  Educación Ambiental y desarrollo sostenible: 59 recurso(s)
  Interculturalidad: 23 recurso(s)
  Igualdad de Género: 22 recurso(s)
  Educación para la Salud: 20 recurso(s)
  Fomento de la creatividad: 4 recurso(s)

Distribución - Values

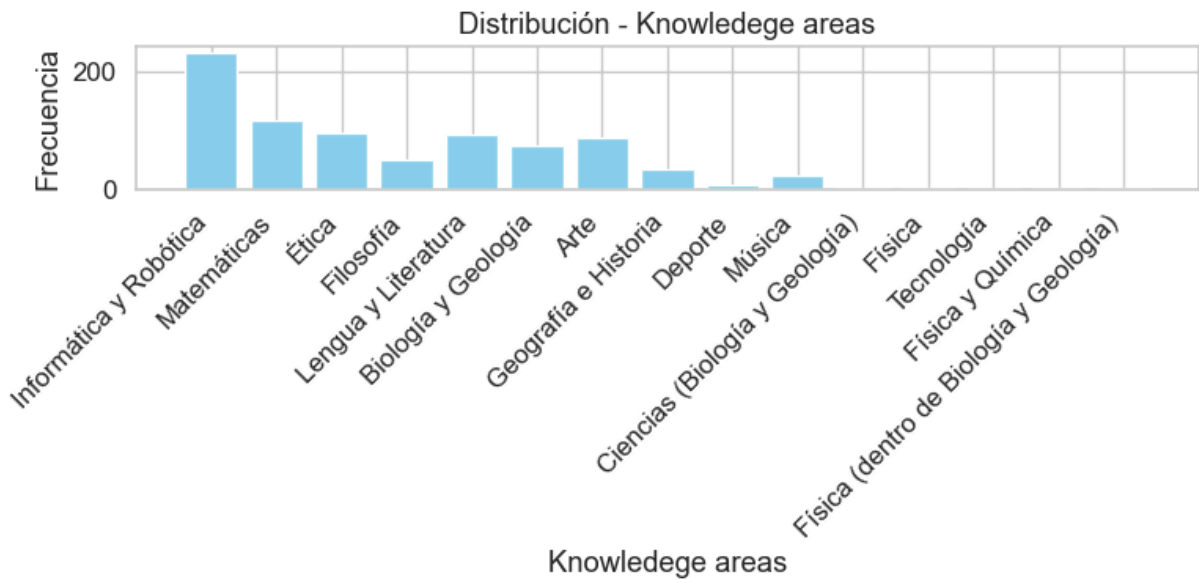=== Distribución de la columna 'Key competences' ===
  Aprender a Aprender: 240 recurso(s)
  Competencia Matemática y en Ciencia y Tecnología: 218 recurso(s)
  Competencia Digital: 197 recurso(s)
  Sociales y Cívicas: 164 recurso(s)
  Comunicación Lingüística: 156 recurso(s)
  Plurilingüe: 5 recurso(s)

Distribución - Key competences

Key competences

=== Distribución de la columna 'Knowledege areas' ===
  Informática y Robótica: 231 recurso(s)
  Matemáticas: 116 recurso(s)
  Ética: 95 recurso(s)
  Lengua y Literatura: 94 recurso(s)
  Arte: 87 recurso(s)
  Biología y Geología: 75 recurso(s)
  Filosofía: 49 recurso(s)
  Geografía e Historia: 34 recurso(s)
  Música: 24 recurso(s)
  Deporte: 6 recurso(s)
  Física: 2 recurso(s)
  Tecnología: 2 recurso(s)
  Ciencias (Biología y Geología): 1 recurso(s)
  Física y Química: 1 recurso(s)
  Física (dentro de Biología y Geología): 1 recurso(s)

Distribución - Knowledege areas

Knowledege areas
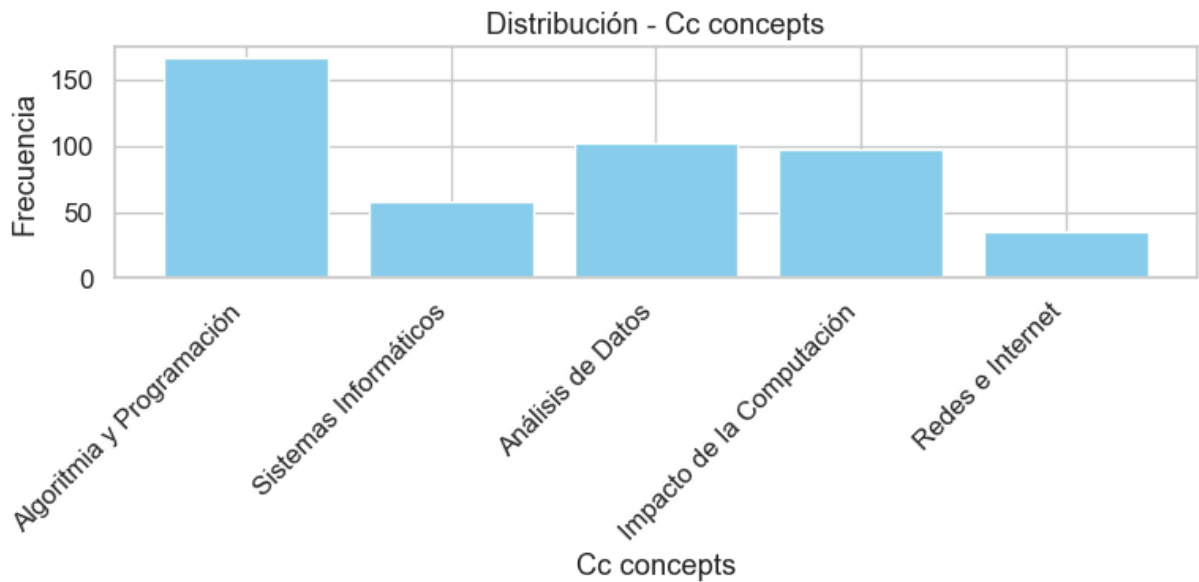
=== Distribución de la columna 'Cc concepts' ===
  Algoritmia y Programación: 167 recurso(s)
  Análisis de Datos: 102 recurso(s)
  Impacto de la Computación: 97 recurso(s)
  Sistemas Informáticos: 58 recurso(s)
  Redes e Internet: 35 recurso(s)

Distribución - Cc concepts

=== Distribución de la columna 'Ct skills' ===
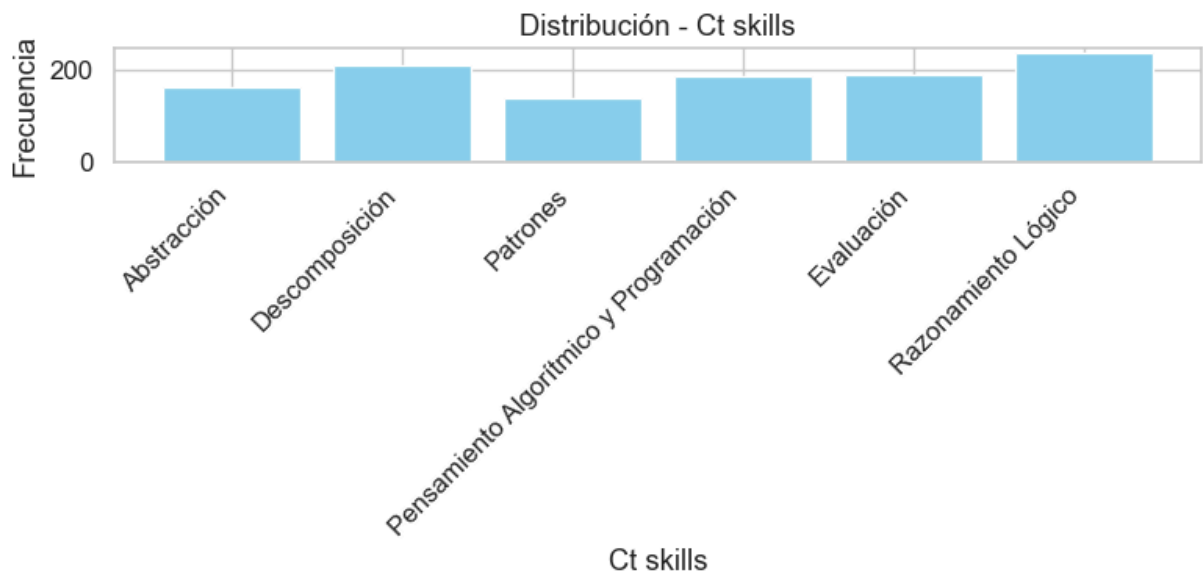 Razonamiento Lógico: 236 recurso(s)
  Descomposición: 209 recurso(s)
  Evaluación: 191 recurso(s)
  Pensamiento Algorítmico y Programación: 185 recurso(s)
  Abstracción: 163 recurso(s)
  Patrones: 138 recurso(s)

Distribución - Ct skills

=== Distribución de la columna 'Duration' ===
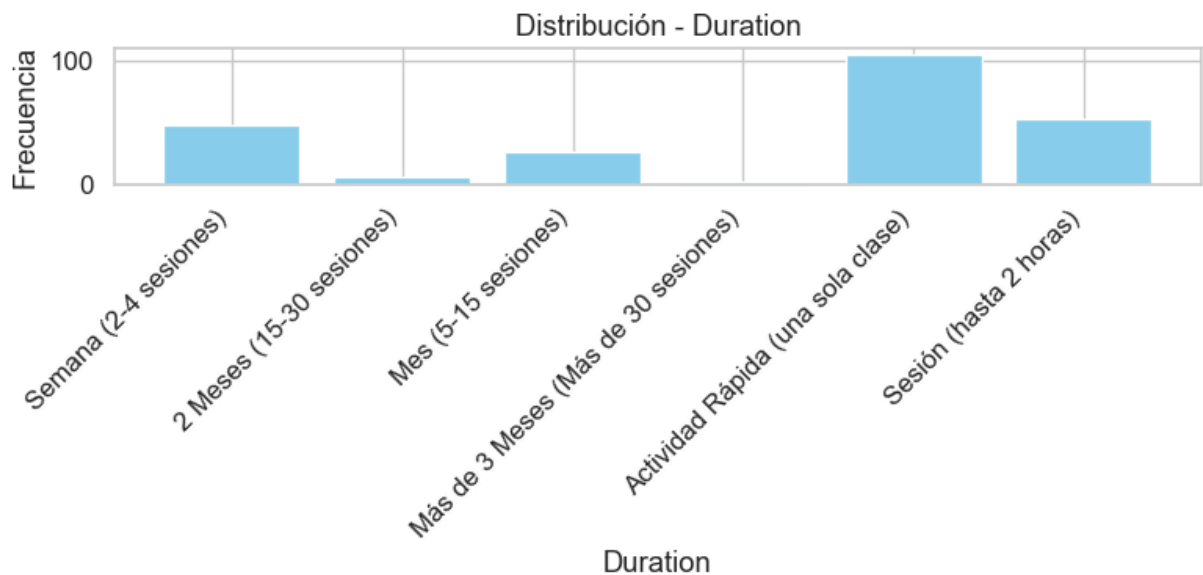 Actividad Rápida (una sola clase): 105 recurso(s)
  Sesión (hasta 2 horas): 53 recurso(s)
  Semana (2-4 sesiones): 48 recurso(s)
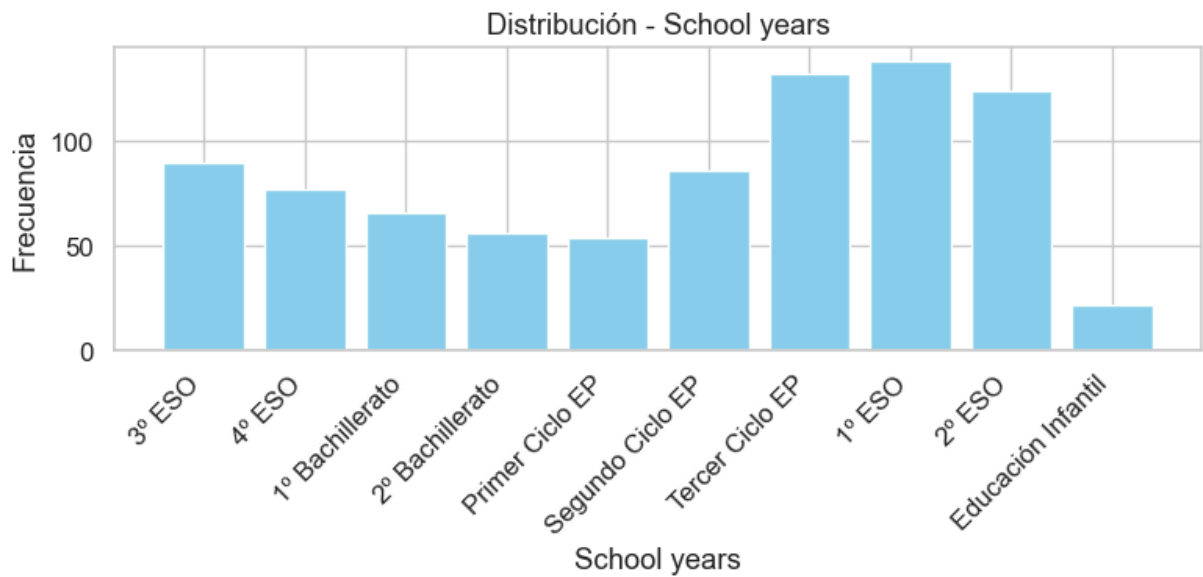 Mes (5-15 sesiones): 26 recurso(s)
  2 Meses (15-30 sesiones): 6 recurso(s)
  Más de 3 Meses (Más de 30 sesiones): 2 recurso(s)

Distribución - Duration

Duration

=== Distribución de la columna 'School years' ===
  1º ESO: 138 recurso(s)
  Tercer Ciclo EP: 132 recurso(s)
  2º ESO: 124 recurso(s)
  3º ESO: 90 recurso(s)
  Segundo Ciclo EP: 86 recurso(s)
  4º ESO: 77 recurso(s)
  1º Bachillerato: 66 recurso(s)
  2º Bachillerato: 56 recurso(s)
  Primer Ciclo EP: 54 recurso(s)
  Educación Infantil: 22 recurso(s)

Distribución - School years

School years

=== Distribución de la columna 'Languages' ===
  Inglés: 207 recurso(s)
  Español: 46 recurso(s)

Distribución - Languages