

```
!pip install streamlit pandas numpy matplotlib statsmodels scikit-learn openpyxl -q
```

```
===== 9.1/9.1 MB 74.6 MB/s eta 0:00:00
===== 6.9/6.9 MB 96.7 MB/s eta 0:00:00
```

```
import streamlit as st
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import statsmodels.api as sm
from sklearn.cluster import KMeans
from sklearn.preprocessing import StandardScaler
```

```
# =====
# KONFIGURASI HALAMAN
# =====
st.set_page_config(page_title="Dashboard Analisis Soal Fisika", layout="wide")
st.title("📊 Dashboard Analisis Hasil Ujian Fisika")
st.markdown("Analisis berbasis data untuk evaluasi 20 butir soal dan 50 siswa")
```

```
2026-02-27 17:51:21.917 WARNING streamlit.runtime.scriptrunner_utils.script_run_context: Thread 'MainThread': missing Script
2026-02-27 17:51:21.919 WARNING streamlit.runtime.scriptrunner_utils.script_run_context: Thread 'MainThread': missing Script
2026-02-27 17:51:22.170
```

Warning: to view this Streamlit app on a browser, run it with the following command:

```
streamlit run /usr/local/lib/python3.12/dist-packages/colab_kernel_launcher.py [ARGUMENTS]
2026-02-27 17:51:22.171 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 17:51:22.174 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 17:51:22.175 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 17:51:22.177 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 17:51:22.178 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
from google.colab import files
import pandas as pd
```

```
print("📁 UPLOAD FILE EXCEL ANDA")
print("Klik 'Choose Files' dan pilih: DATA 20 SOAL FISIKA.xlsx")
uploaded = files.upload()
```

📁 UPLOAD FILE EXCEL ANDA
Klik 'Choose Files' dan pilih: DATA 20 SOAL FISIKA.xlsx
 DATA 20 S... FISIKA.xlsx
DATA 20 SOAL FISIKA.xlsx(application/vnd.openxmlformats-officedocument.spreadsheetml.sheet) - 12167 bytes, last modified: 2/27/2026 - 100% done
Saving DATA 20 SOAL FISIKA.xlsx to DATA 20 SOAL FISIKA.xlsx

```
# =====
# LOAD DATA
# =====
df = pd.read_excel("DATA 20 SOAL FISIKA.xlsx")
print(f"✅ Data berhasil dimuat! Jumlah siswa: {len(df)}")
```

✅ Data berhasil dimuat! Jumlah siswa: 50

```
# Ambil kolom soal (Soal_1 sampai Soal_20) dan pastikan numerik
soal_cols = [col for col in df.columns if 'Soal' in col]
indikator = df[soal_cols].apply(pd.to_numeric, errors="coerce")
```

```
# Hitung total skor per siswa
df['Total_Skor'] = indikator.sum(axis=1)
max_score = len(soal_cols) * 4 # 20 soal x skor maksimal 4
```

```
# =====
# KPI HASIL UJIAN
# =====
mean_scores = indikator.mean()
ikm = (mean_scores.mean() / 4) * 100 # Normalisasi ke persen (max skor = 4)
```

```
def kategori_ikm(x):
    if x >= 80: return "Sangat Baik"
    elif x >= 65: return "Baik"
    elif x >= 50: return "Cukup"
    else: return "Perlu Perbaikan"
```

```
col1, col2, col3 = st.columns(3)
col1.metric("📊 Rata-rata Skor Ujian", f"{ikm:.2f}%")
col2.metric("📌 Kategori", kategori_ikm(ikm))
col3.metric("👤 Total Responden", len(df))
```

```
2026-02-27 18:03:29.217 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:03:29.219 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:03:29.220 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:03:29.221 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:03:29.222 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:03:29.224 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:03:29.224 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:03:29.226 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:03:29.227 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:03:29.228 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:03:29.229 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:03:29.230 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
st.divider()
```

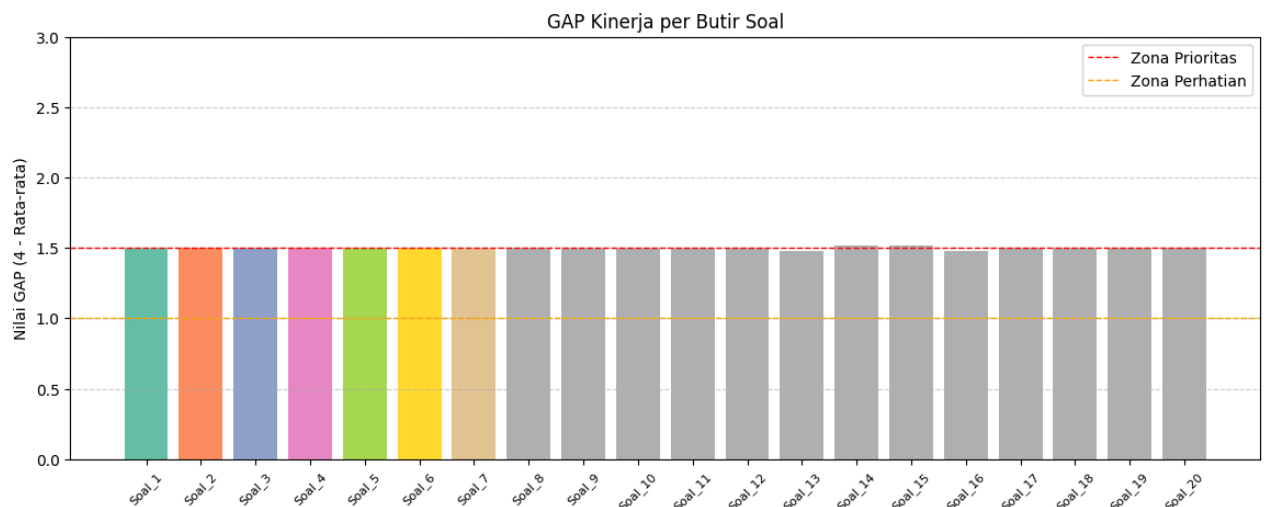
```
2026-02-27 18:03:45.931 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:03:45.932 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:03:45.935 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
# =====
# 📌 ANALISIS GAP
# =====
st.header("📌 Analisis GAP (Skor Maksimal vs Performance)")
```

```
2026-02-27 18:10:34.281 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:10:34.284 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:10:34.287 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
gap_scores = 4 - mean_scores # GAP dari skor maksimal (4)
prioritas_gap = gap_scores.idxmax()
```

```
fig_gap, ax_gap = plt.subplots(figsize=(14, 5))
ax_gap.bar(gap_scores.index, gap_scores.values, color=plt.cm.Set2(range(len(gap_scores))))
ax_gap.axhline(1.5, linestyle='--', color='red', linewidth=1, label='Zona Prioritas')
ax_gap.axhline(1.0, linestyle='--', color='orange', linewidth=1, label='Zona Perhatian')
ax_gap.set_ylabel("Nilai GAP (4 - Rata-rata)")
ax_gap.set_title("GAP Kinerja per Butir Soal")
ax_gap.set_ylim(0, 3)
ax_gap.legend(loc='upper right')
ax_gap.grid(axis="y", linestyle="--", alpha=0.6)
ax_gap.tick_params(axis='x', rotation=45, labels=8)
```



```
for i, v in enumerate(gap_scores.values):
    ax_gap.text(i, v + 0.05, f"{v:.2f}", ha="center", fontweight="bold", fontsize=8)
```

```
st.pyplot(fig_gap)
st.info(f"🔴 **Prioritas Perbaikan**: Fokus pada {prioritas_gap} karena memiliki GAP terbesar ({gap_scores.max():.2f})")
```

```
2026-02-27 18:13:13.368 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:13:14.088 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:13:14.089 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:13:14.090 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:13:14.092 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:13:14.094 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:13:14.095 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
st.divider()
```

```
2026-02-27 18:13:29.745 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:13:29.747 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:13:29.749 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
# =====
# 2 ANALISIS KORELASI
# =====
st.header("2 Korelasi Antar Butir Soal")
```

```
2026-02-27 18:25:31.347 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:25:31.353 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:25:31.356 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
corr = indikator.corr()
```

```
fig_corr, ax_corr = plt.subplots(figsize=(12, 10))
im = ax_corr.imshow(corr, cmap="coolwarm", vmin=-1, vmax=1, aspect='auto')
plt.colorbar(im, ax=ax_corr, label='Koefisien Korelasi')
```

```
<matplotlib.colorbar.Colorbar at 0x7f9c18311d00>
```

```
ax_corr.set_xticks(range(len(corr.columns)))
ax_corr.set_yticks(range(len(corr.columns)))
ax_corr.set_xticklabels(corr.columns, rotation=90, ha="center", fontsize=8)
ax_corr.set_yticklabels(corr.columns, fontsize=8)
```

```
[Text(0, 0, 'Soal_1'),
Text(0, 1, 'Soal_2'),
Text(0, 2, 'Soal_3'),
Text(0, 3, 'Soal_4'),
Text(0, 4, 'Soal_5'),
Text(0, 5, 'Soal_6'),
Text(0, 6, 'Soal_7'),
Text(0, 7, 'Soal_8'),
Text(0, 8, 'Soal_9'),
Text(0, 9, 'Soal_10'),
Text(0, 10, 'Soal_11'),
Text(0, 11, 'Soal_12'),
Text(0, 12, 'Soal_13'),
Text(0, 13, 'Soal_14'),
Text(0, 14, 'Soal_15'),
Text(0, 15, 'Soal_16'),
Text(0, 16, 'Soal_17'),
Text(0, 17, 'Soal_18'),
Text(0, 18, 'Soal_19'),
Text(0, 19, 'Soal_20')]
```

```
for i in range(len(corr)):
    for j in range(len(corr)):
        ax_corr.text(j, i, f"{corr.iloc[i, j]:.2f}", ha="center", va="center", fontsize=6)
```

```
ax_corr.set_title("Heatmap Korelasi Pearson (Soal_1 - Soal_20)")
st.pyplot(fig_corr)
```

```
2026-02-27 18:25:47.029 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:25:49.123 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:25:49.124 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:25:49.125 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
# Ranking korelasi dengan total skor
corr_total = indikator.corrwith(df['Total_Skor']).sort_values(ascending=False)
st.subheader("📊 Ranking Soal Berpengaruh terhadap Total Skor")
st.dataframe(corr_total.head(10), use_container_width=True)
```

```
st.divider()
st.header('3. Analisis Regresi Berganda', use_container_width=True)
```

```
/usr/local/lib/python3.12/dist-packages/numpy/lib/_function_base_impl.py:2922: RuntimeWarning: invalid value encountered in
c /= stddev[:, None]
/usr/local/lib/python3.12/dist-packages/numpy/lib/_function_base_impl.py:2923: RuntimeWarning: invalid value encountered in
c /= stddev[None, :]
2026-02-27 18:25:54.131 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:25:54.132 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:25:54.133 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:25:54.135 Please replace `use_container_width` with `width`.
```

`use_container_width` will be removed after 2025-12-31.

For `use_container_width=True`, use `width='stretch'`. For `use_container_width=False`, use `width='content'`.

```
2026-02-27 18:25:54.186 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:25:54.187 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:25:54.188 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
st.divider()
```

```
2026-02-27 18:25:58.364 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:25:58.366 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:25:58.367 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
# =====
# 3 ANALISIS REGRESI
# =====
st.header("3 Analisis Regresi Linear Berganda")
st.markdown("Melihat pengaruh Soal_1 s/d Soal_19 terhadap hasil Soal_20")
```

```
2026-02-27 18:26:26.261 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:26.265 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:26.266 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:26.269 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:26.270 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:26.271 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
X = sm.add_constant(indikator.iloc[:, 0:19]) # Soal_1 - Soal_19
y = indikator.iloc[:, 19] # Soal_20
```

```
model = sm.OLS(y, X, missing="drop").fit()
```

```
coef = model.params[1:]
r2 = model.rsquared
```

```
fig_reg, ax_reg = plt.subplots(figsize=(10, 5))
coef_sorted = coef.abs().sort_values(ascending=False).head(5)
colors_reg = ['green' if coef.loc[idx] > 0 else 'red' for idx in coef_sorted.index]
ax_reg.bar(coef_sorted.index, [coef.loc[idx] for idx in coef_sorted.index], color=colors_reg, alpha=0.8)
ax_reg.axhline(0, linestyle="--", color="black")
ax_reg.set_title("TOP 5 Faktor Paling Berpengaruh terhadap Soal_20")
ax_reg.set_ylabel("Koefisien Regresi")
ax_reg.tick_params(axis='x', rotation=45, labelsz=8)
```

```
st.pyplot(fig_reg)
st.info(f"Nilai R2: {r2:.3f} – Sejauh mana Soal_1-19 menjelaskan variansi Soal_20")
st.success(f"Faktor Dominan: {coef.abs().idxmax()} (Koefisien: {coef.abs().max():.4f})")
```

```
2026-02-27 18:26:38.516 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:38.624 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:38.625 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:38.625 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:38.628 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:38.629 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:38.630 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:38.633 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:38.634 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:38.635 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
st.divider()
```

```
2026-02-27 18:26:41.700 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:41.703 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:26:41.704 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
# =====
# 📄 SEGMENTASI SISWA (K-MEANS)
# =====
st.header("📄 Segmentasi Kemampuan Siswa")
```

```
2026-02-27 18:27:03.507 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:27:03.510 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:27:03.511 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
scaler = StandardScaler()
X_scaled = scaler.fit_transform(indikator.fillna(indikator.mean()))
```

```
kmeans = KMeans(n_clusters=3, random_state=42, n_init=10)
cluster_label = kmeans.fit_predict(X_scaled)
```

```
# 🔥 GROUPBY PALING AMAN (HANYA DATA NUMERIK)
indikator_cluster = indikator.copy()
indikator_cluster["Cluster"] = cluster_label
cluster_mean = indikator_cluster.groupby("Cluster").mean()
```

```
# =====
# TAMBAHKAN KOLOM CLUSTER KE df
# =====
df['Cluster'] = cluster_label # ← INI PENTING!
```

```
# =====
# HITUNG RATA-RATA PER CLUSTER
# =====
avg_per_cluster = df.groupby('Cluster')['Total_Skor'].mean()
print("Rata-rata Total Skor per Cluster:")
print(avg_per_cluster)
```

```
Rata-rata Total Skor per Cluster:
Cluster
0    50.0
1    50.0
2    50.0
Name: Total_Skor, dtype: float64
```

```
# =====
# URUTKAN DAN BERI LABEL SEGMENT
# =====
cluster_urut = avg_per_cluster.sort_values(ascending=False).index
```

```
# Beri label segment
segment_labels = []
for idx in avg_per_cluster.sort_values(ascending=False).index:
    if avg_per_cluster[idx] >= df['Total_Skor'].mean() * 1.1:
        segment_labels.append('Kelompok Mahir')
    elif avg_per_cluster[idx] <= df['Total_Skor'].mean() * 0.9:
        segment_labels.append('Kelompok Perlu Bimbingan')
    else:
        segment_labels.append('Kelompok Menengah')
```

```
cluster_mean["Segment"] = segment_labels
```

```
# Tampilkan tabel segmentasi
st.markdown("📄 **Hasil Pengelompokan Siswa:**")
segment_table = df[['Responden', 'Total_Skor']].copy()
segment_table['Cluster'] = cluster_label
segment_table['Segment'] = segment_table['Cluster'].map(dict(zip(range(3), segment_labels)))
st.dataframe(segment_table.head(20), use_container_width=True, hide_index=True)
```

```
2026-02-27 18:36:22.541 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:22.542 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:22.546 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:22.555 Please replace `use_container_width` with `width`.
```

```
`use_container_width` will be removed after 2025-12-31.
```

```
For `use_container_width=True`, use `width='stretch'`. For `use_container_width=False`, use `width='content'`.
2026-02-27 18:36:22.561 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:22.562 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:22.563 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
# Radar Chart
labels = soal_cols
angles = np.linspace(0, 2*np.pi, len(labels), endpoint=False).tolist()
angles += angles[:1]
```

```
fig_rad = plt.figure(figsize=(10, 10))
ax_rad = plt.subplot(polar=True)
colors = ["#2ecc71", "#f1c40f", "#e74c3c"]
```

```
for i, row in cluster_mean.iterrows():
    values = row[labels].tolist() + [row[labels].tolist()[0]]
    ax_rad.plot(angles, values, label=row["Segment"], color=colors[i], linewidth=2)
    ax_rad.fill(angles, values, alpha=0.25, color=colors[i])
```

```
ax_rad.set_thetagrids(np.degrees(angles[:-1]), labels, fontsize=7)
ax_rad.set_ylim(0, 4)
ax_rad.set_title("📊 Radar Segmentasi Kemampuan Siswa", pad=20, fontsize=14)
ax_rad.legend(loc="upper right", bbox_to_anchor=(1.3, 1.1))
```

```
<matplotlib.legend.Legend at 0x7f9c182cd820>
```

```
st.pyplot(fig_rad)
st.success("🎉 Segmentasi berhasil - siap untuk rekomendasi strategi pembelajaran")
```

```
2026-02-27 18:36:39.390 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
/usr/local/lib/python3.12/dist-packages/streamlit/elements/pyplot.py:225: UserWarning: Glyph 127919 (\N{DIRECT HIT}) missing
fig.savefig(image, **kwargs)
2026-02-27 18:36:40.349 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:40.350 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:40.351 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:40.354 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:40.355 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:40.356 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
# =====
# SIDEBAR: EKSPOR DATA
# =====
st.sidebar.header("⚙️ Pengaturan")
```

```
2026-02-27 18:36:46.166 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:46.167 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:46.168 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator(_root_container=1, _parent=DeltaGenerator())
```

```
if st.sidebar.button("📄 Unduh Hasil Segmentasi"):
    csv = segment_table.to_csv(index=False, sep=';')
    st.sidebar.download_button(
        label="Klik untuk unduh CSV",
        data=csv,
        file_name="hasil_segmentasi_siswa.csv",
        mime="text/csv"
    )
```

```
2026-02-27 18:36:49.246 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:49.248 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:49.249 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:49.250 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:49.251 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:36:49.252 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
```

```
# =====
# PENUTUP
# =====
st.success("🎉 Segmentasi berhasil - siap untuk strategi pembelajaran & remedial")
```

```
2026-02-27 18:47:58.241 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:47:58.244 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:47:58.254 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator()
```

```
st.sidebar.markdown("---")
st.sidebar.info("Dashboard Analisis Butir Soal Fisika • Evaluasi kualitas soal & pemetaan kemampuan siswa")
```

```
2026-02-27 18:48:31.574 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:48:31.575 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:48:31.576 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:48:31.577 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:48:31.581 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
2026-02-27 18:48:31.583 Thread 'MainThread': missing ScriptRunContext! This warning can be ignored when running in bare mode
DeltaGenerator(_root_container=1, _parent=DeltaGenerator())
```