In [3]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

In [4]:
```
data = pd.read_csv('C:/Users/SW20407278/Desktop/Final AI/Hands-On/Use_Cases_EDA/IRIS_E
```

In [5]:
```
data
```

Out[5]:

	sepal.length	sepal.width	petal.length	petal.width	variety
0	5.1	3.5	1.4	0.2	Setosa
1	4.9	3.0	1.4	0.2	Setosa
2	4.7	3.2	1.3	0.2	Setosa
3	4.6	3.1	1.5	0.2	Setosa
4	5.0	3.6	1.4	0.2	Setosa
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	Virginica
146	6.3	2.5	5.0	1.9	Virginica
147	6.5	3.0	5.2	2.0	Virginica
148	6.2	3.4	5.4	2.3	Virginica
149	5.9	3.0	5.1	1.8	Virginica

150 rows × 5 columns

In [6]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 5 columns):
 #   Column        Non-Null Count  Dtype  
---  ------        --------------  -----  
 0   sepal.length  150 non-null    float64
 1   sepal.width   150 non-null    float64
 2   petal.length  150 non-null    float64
 3   petal.width   150 non-null    float64
 4   variety       150 non-null    object 
dtypes: float64(4), object(1)
memory usage: 6.0+ KB
```

In [7]:
```
### Shows statistical summary of the dataset
data.describe()
```

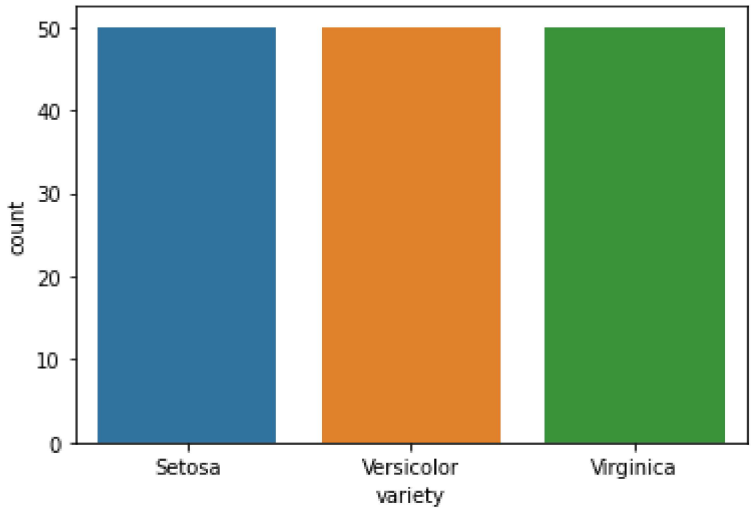
Out[7]:

	sepal.length	sepal.width	petal.length	petal.width
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.057333	3.758000	1.199333
std	0.828066	0.435866	1.765298	0.762238
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.800000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000
max	7.900000	4.400000	6.900000	2.500000

In [8]:
```
data.value_counts('variety')
```

Out[8]:
```
variety
Setosa        50
Versicolor    50
Virginica     50
dtype: int64
```

In [9]:
```
sns.countplot(x='variety', data=data, )
plt.show()
```



In [10]:
```
dummies = pd.get_dummies(data.variety)
```

In [11]:
```
finalDataSet = pd.concat([ pd.get_dummies(data.variety) , data.iloc[:,[0,1,2,3]] ] , a
```

In [12]:
```
finalDataSet.head()
```

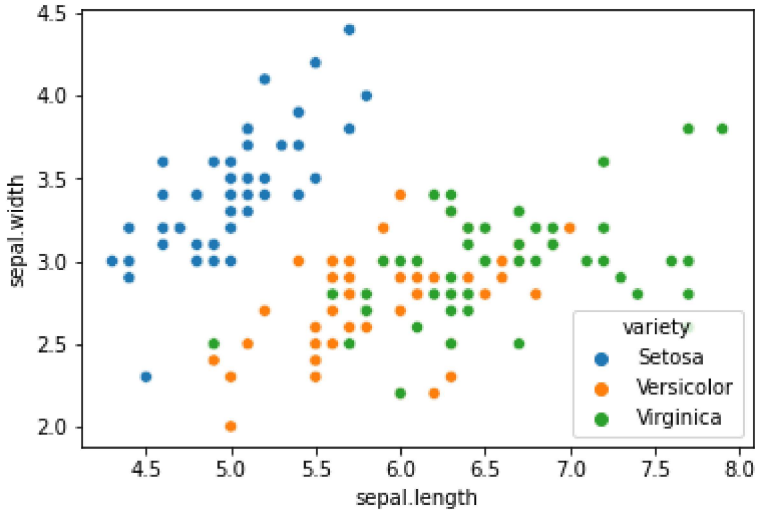
Out[12]:

	Setosa	Versicolor	Virginica	sepal.length	sepal.width	petal.length	petal.width
0	1	0	0	5.1	3.5	1.4	0.2
1	1	0	0	4.9	3.0	1.4	0.2
2	1	0	0	4.7	3.2	1.3	0.2
3	1	0	0	4.6	3.1	1.5	0.2
4	1	0	0	5.0	3.6	1.4	0.2

In [13]:
```
### Setosa has smaller sepal length and larger sepal width.
### Versicolor is in the middle of Setosa and Virginica
### Virginica has larger sepal length and smaller sepal width

sns.scatterplot(x='sepal.length', y='sepal.width',
                hue='variety', data=data, )
```

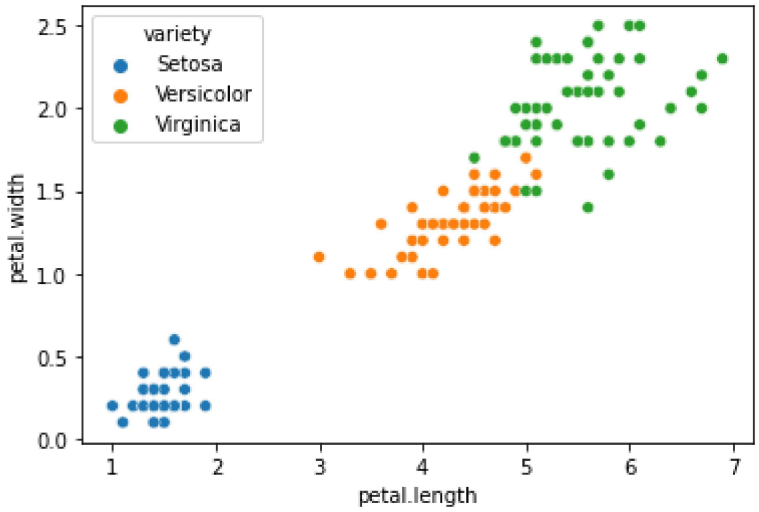
Out[13]:
```
<AxesSubplot:xlabel='sepal.length', ylabel='sepal.width'>
```



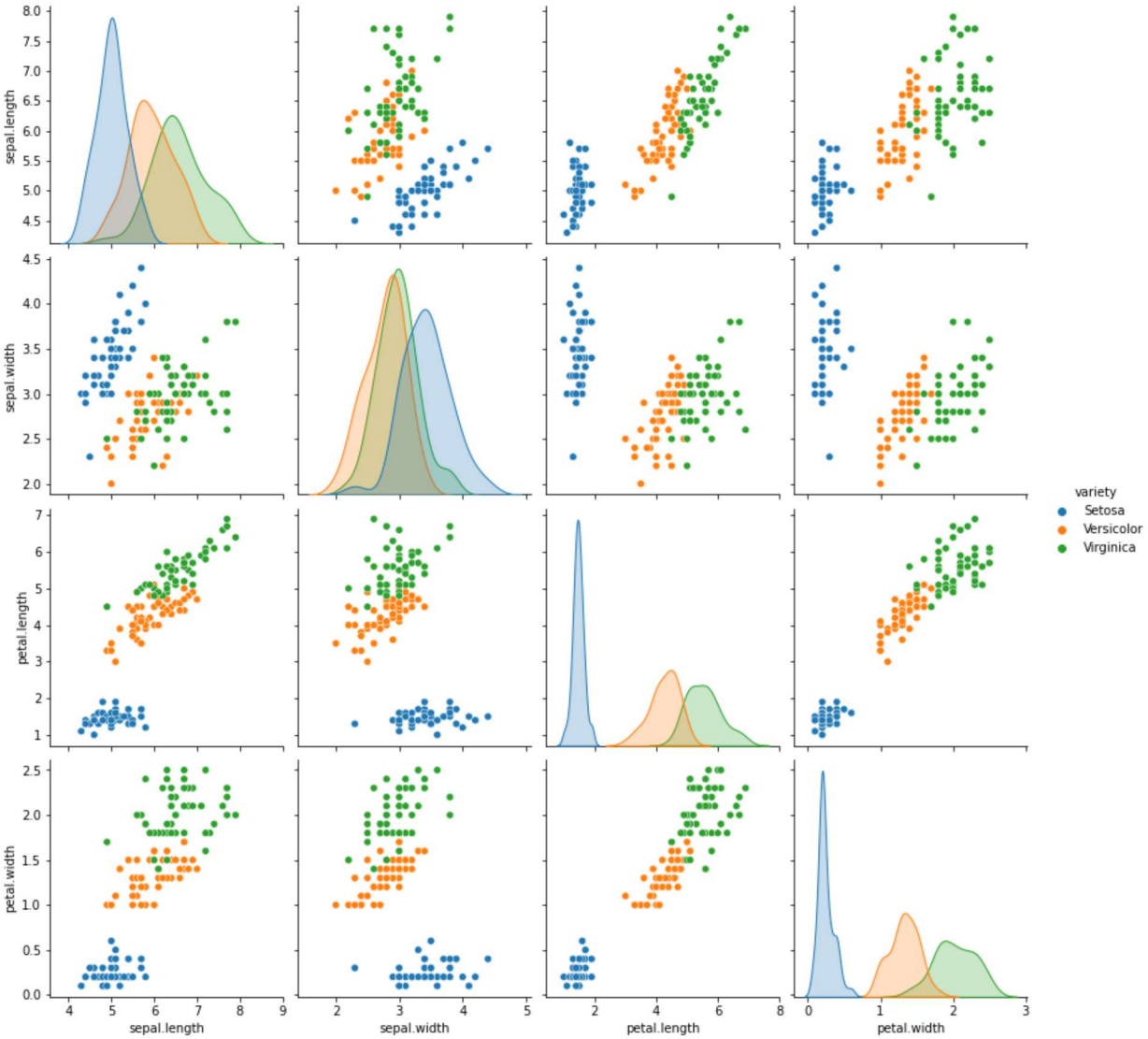
In [14]:
```
### Setosa has smaller petal length and petal width
### Veriscolor is in the middle of Setosa and Virginica
### Virginica has largest petal length and petal width

sns.scatterplot(x='petal.length', y='petal.width',
                hue='variety', data=data, )
```

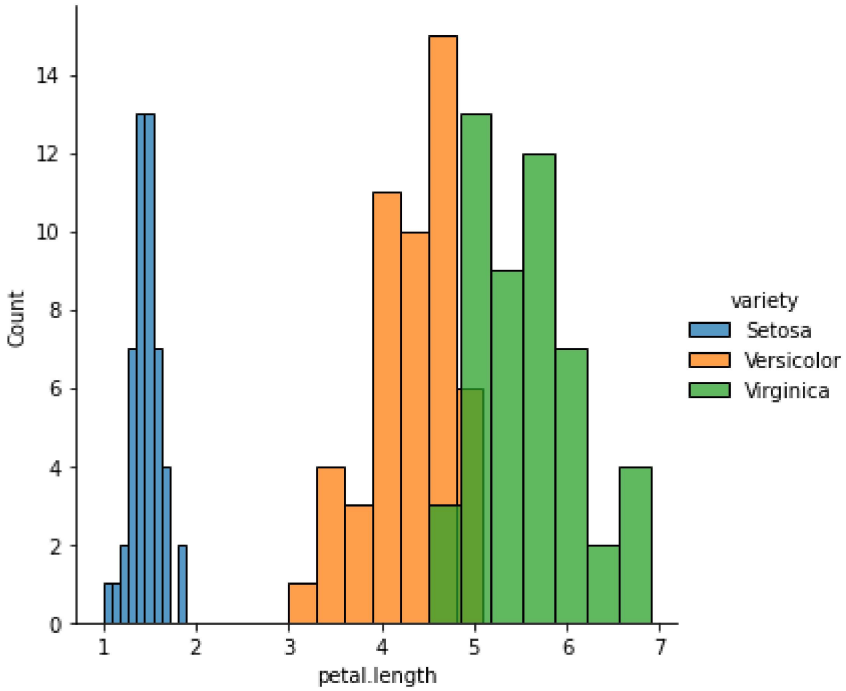
Out[14]:
```
<AxesSubplot:xlabel='petal.length', ylabel='petal.width'>
```



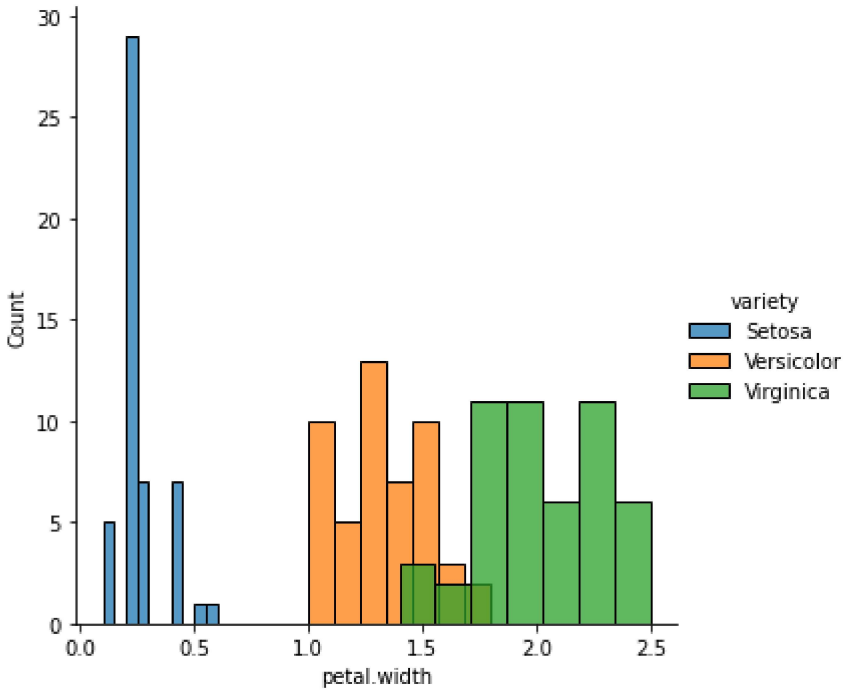
In [15]:
```
#### Pair Plot shows petal length and petal width are the most useful features to ider
sns.pairplot(data,hue="variety",height=3);
plt.show()
```



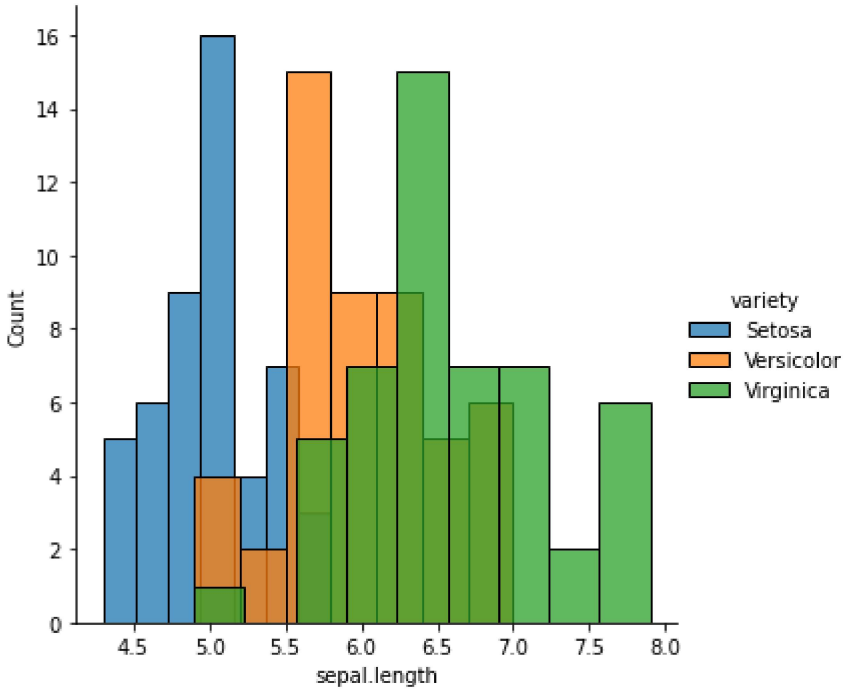
In [21]:
```
sns.FacetGrid(data,hue="variety",height=5).map(sns.histplot, 'petal.length').add_leger
plt.show();
```



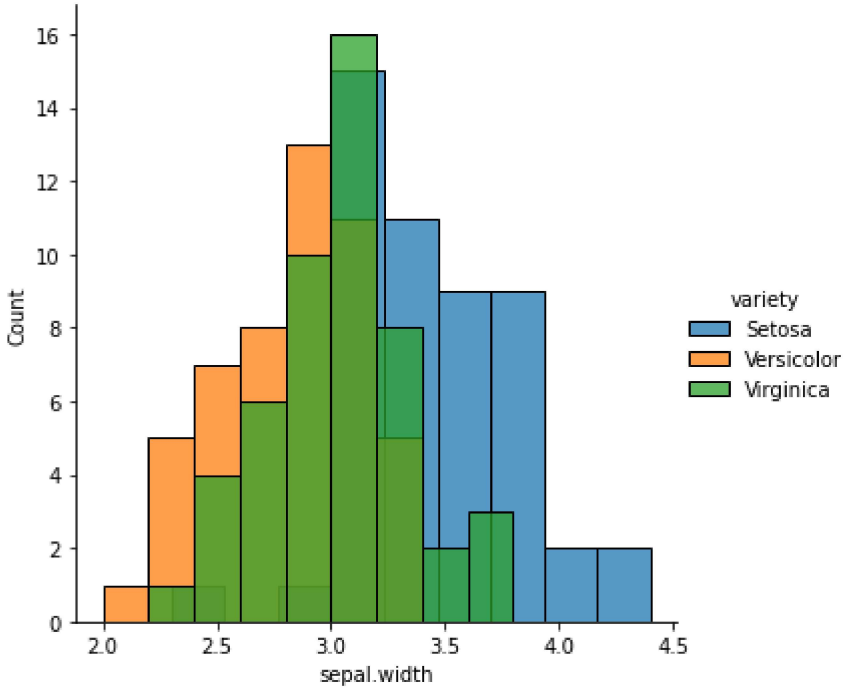
In [22]:
```
sns.FacetGrid(data,hue="variety",height=5).map(sns.histplot, 'petal.width').add_legend
plt.show();
```



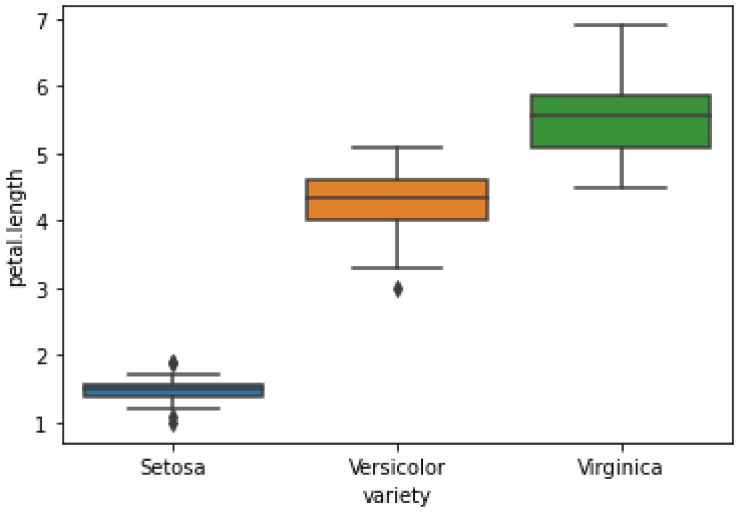
In [23]:
```
sns.FacetGrid(data,hue="variety",height=5).map(sns.histplot, 'sepal.length').add_leger
plt.show();
```



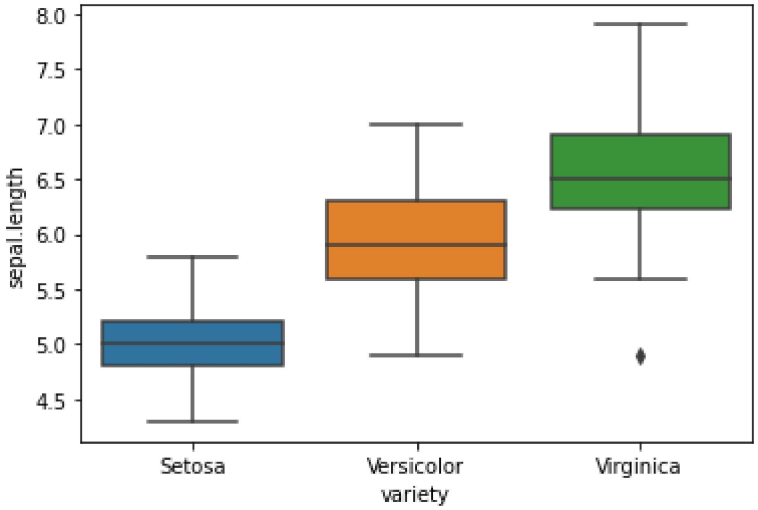
In [24]:
```
sns.FacetGrid(data,hue="variety",height=5).map(sns.histplot, 'sepal.width').add_legend
plt.show();
```



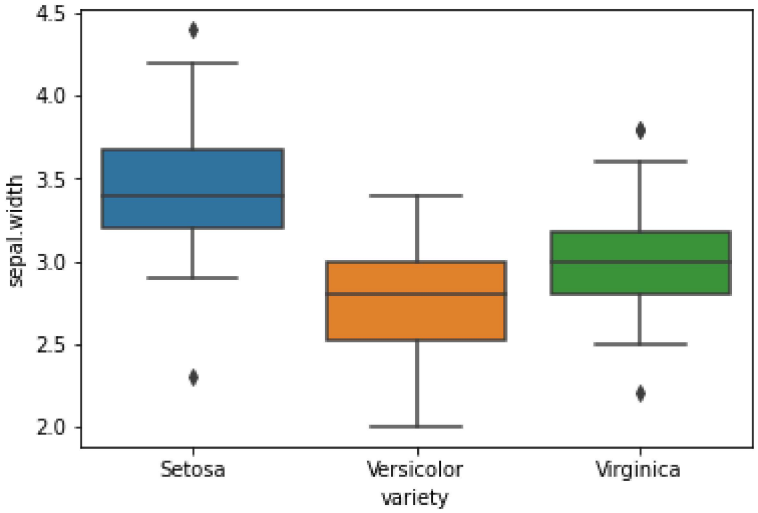
In [30]:
```
sns.boxplot(x="variety",y="petal.length", data=data)
plt.show()
```



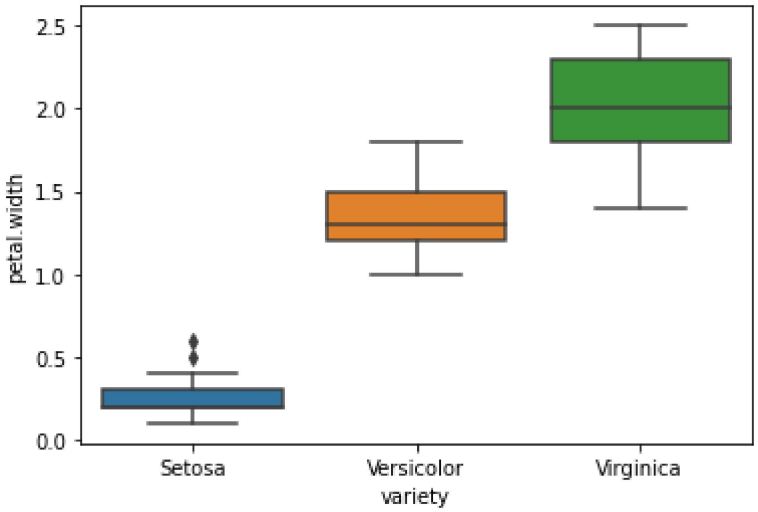
In [31]:
```
sns.boxplot(x="variety",y="sepal.length", data=data)
plt.show()
```



In [32]:
```
sns.boxplot(x="variety",y="sepal.width", data=data)
plt.show()
```



In [33]:
```
sns.boxplot(x="variety",y="petal.width", data=data)
plt.show()
```


2.5
2.0
1.5
1.0
0.5
0.0
petal.width
Setosa
Versicolor
Virginica
variety