

Teacher Sheet

Brain Imaging Technology

Lesson Title: *Watch Your Thoughts!*

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Technology	How It Works	What It Does	Advantages	Disadvantages
CT	X rays beamed into head	gives cross-sections of brain	shows brain structure	doesn't show brain function; uses radioactivity
PET	radioactive elements injected or breathed	traces use of elements by brain	shows brain function	expensive; uses radioactivity
MRI	changes in radio waves in magnetic field detected	reveals brain structure in different dimensions	noninvasive—no radioactivity; detailed view of brain	expensive; not all patients can tolerate
fMRI	changes in blood flow detected in magnetic field	monitors use of blood by brain	shows both brain structure and function; noninvasive; more detailed than PET	faster than PET, but too slow to track all brain activity

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Technology	How It Works	What It Does	Advantages	Disadvantages
SPECT	radioactive elements injected or breathed	traces use of elements by brain	less expensive than PET; less staff needed	less accurate information than PET
EEG	electrodes placed on scalp	records electrical firing of brain cells	noninvasive; very fast	information not detailed
MEG	electrodes placed on scalp in magnetic field	records electrical firing of brain cells	noninvasive; very fast	information not detailed