

Chapter 2: Discuss how the brainstem, limbic system and cerebral cortex are each involved when a person plays an instrument

Page	Brain	Function	Playing Instrument	Student Feedback
	Brainstem		The brainstem is the <u>crossover point</u> , where <u>nerves to and from</u> each side of the brain mostly connect with the opposite side of the body.	
	Medulla	Controls heartbeat & breathing	The brainstem also contains the <u>medulla</u> , which <u>controls</u> heartbeat, breathing and other vital life <u>functions</u> that keep the musician alive.	
	Pons	Assists in coordination		
	Reticular formation	Controls arousal & monotony	Within the brainstem, the reticular formation <u>receives inputs</u> from the thalamus and the cerebra cortex that <u>help maintain the musician's arousal</u> , which is <u>important in performing</u> before a group.	
	Thalamus	Switchboard between sensory neurons and higher brain regions that deal with seeing, hearing, tasting and touching	Atop the brainstem sits the thalamus, which; <u>routes sensory information</u> from the musician's <u>eyes, ears and fingertips</u> to the higher brain regions <u>connecting hearing, and touching</u> . Through the thalamus the <u>musician's brain receives the necessary sensory information to enable decision-making regarding all aspects of playing the instrument</u> . The thalamus also <u>routes</u> some of the higher brain responses <u>to the cerebellum</u> , which <u>helps coordinate movements</u> involved in <u>playing</u> the instrument.	
	Limbic System		The limbic system's <u>involvement in emotion, motivation and memory</u> will influence many aspects of a musical <u>performance</u>	
	Hypothalamus	Regulates thirst, hunger, body temperature and sexual behavior. Controls maintenance functions, i.e., eating; Linked to emotion & reward center Relays visual and auditory cues	The <u>pleasure centers</u> of the hypothalamus comprise the brain's reward system and will <u>help maintain the musician's motivation</u> for learning and playing the instrument.	
	Amygdala	Emotion, such as aggression, rage and fear [and anxiety]		
	Hippocampus	Memory and memory formation	The hippocampus will have been <u>involved in the formation of memories</u> of how to <u>play</u> the musical instrument, <u>as well as memories</u> of the notes and lyrics for each song.	

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	Cerebral Cortex		The cerebral cortex will <u>oversee</u> will oversee all aspects of the musician's behavior . Sensory projection areas in the occipital, temporal, parietal lobes <u>will process</u> messages from the musician's, eyes, ears, and fingertips.	
	Frontal Lobe	Speaking, muscle movements; making plans & judgments	Association <u>areas in the frontal lobes</u> and other parts of the brain will be <u>involved in the planning and decision making inherent in playing</u> the musical instrument.	
	Prefrontal cortex	Enables people to feel remorse or learn moral behavior, to make oral decisions; Helps in planning		
	Motor Cortex	Moves body parts; sends messages out to the body; controls voluntary movements	The motor cortex of the frontal lobes will <u>organize the necessary body movements</u> .	
	Parietal lobe:	Includes sensory cortex Spatial context		
	Sensory Cortex	Incoming messages from skin and movement of the body parts; registers & processes body sensations		
	Broca's area	Initiates conversations		
	Occipital lobe: visual cortex	receives visual info from opposite visual field		
	Temporal lobe:	Auditory		
	Auditory cortex	Processes sounds		
	Wernicke's area	Processes speech so sounds		