Investigating Star Life Cycles with Science and Art

Many of the wonderful things we see in space are different phases of a star's life cycle. These beautiful objects represent different forces and processes at work within or around a star. The pictures we have seen from space for these objects are as beautiful as any work of human made art. This project is an opportunity for you to investigate some of these concepts involved in star life cycles in depth. It is a chance for you to meld science with art to create something that shows your understanding of the evolution of stars. There are many different ways you can do this but all include decisions made by you in three areas: a product decision, a process decision and a science decision. These decisions can be made in any order but they should work together to show what you understand about stars' life cycles.

Product Decision: What will your final product be? What do you want to create? Would you like to work with words, your hands, your voice or electronic media? Some ideas …

Illustrated Diagrams and Maps	3D Model	Animated Short
Journal Entries	Musical Skit	Whiteboard Video
Design a Video Game	Create a Painting	Infographic
Slow Motion Video	Write a Biography	Magazine Article
Informational Cartoon	Triptych	Write a Play
Create a podcast/Ted Talk	Digital Storytelling	Create a Skit
Illustrate a Graphic Novel	Create a Sculpture	Design a Puzzle
Write & Perform in a Haiku	A Child's Picture Book	Choreograph a Dance
Diorama	Collage	Quilt/Embroidery
Mural (in room 322?? 4th floor)	Mosaic	Mobile

Process Decision: How will you create your product? What tool(s) will you use? Some ideas …

Physical Media - Chalk Pastels; Paint; Watercolors; Stencils; Colored Pencils; Pen & Ink/Charcoal; Clay; Cut Paper; Magazine Pages; Fabric; Wire; Wood; Paper; Thread; Yarn; Plaster; Beads; Cardboard

Digital Media

Adobe Spark Graphic Design – Create graphics, web stories, animated videos [https://spark.adobe.com]
StoryboardThat – Create storyboards [http://www.storyboardthat.com]
PowToon Website – Animated Videos/Presentations [https://www.powtoon.com]
Piktochart– Create Infographics [https://piktochart.com]
Canva – Create Infographics [https://www.canva.com/create/infographics/]
Fontstruct – Create Fonts [https://fontstruct.com]
Scratch – Use coding to create interactive stories, animations, games [https://scratch.mit.edu]
Flame Painter Free – Online drawing using flames [http://www.escapemotions.com/experiments/flame/index.php]
myoats – Online drawing, geometric drawing [https://www.myoats.com/create.aspx]
bomomo – Online drawing, abstract [http://bomomo.com]
Grafitti Playdo – Online drawing, spray paint on a wall [http://graffiti.playdo.com]
Texturizer – Make pictures from text [http://lapin-bleu.net/software/textorizer/]
APOD – Astronomy Picture of the Day Index [https://apod.nasa.gov/apod/lib/aptree.html]

Science Decision: What will you focus on? What are you interested in finding out more about? Some ideas …

- Follow the path of a low mass, medium mass, or high mass star's life cycle, explaining its evolution and the science involved at each stage
- Delve deep into one stage of a star's life cycle; Find out about the deeper science that is going on during this stage; Would this stage appear on a HR diagram? If so, where? What are scientists currently researching about this stage?

Type	Common name	Other name	Constellation
Nebulae-Protostars	Lagoon nebula	M8	Sagittarius
	Trifid nebula	M20	Sagittarius
	Orion nebula	M4	Orion
	Rosette nebula	NGC 2237	Monoceros
	Eagle nebula	M16	Serpens
Brown Dwarfs	ULAS J133553.45+113005.2 (T dwarf) 2/100 of Mass of Sun		Virgo
	Teide 1 5/100 of Mass of Sun		Taurus (in the Pleiades)
Main sequence star	Siruis A 2 x Mass of Sun	Alpha CMa	Canis Major
	Vega 2 x Mass of Sun	Alpha Lyr	Lyra
	Spica 10 x Mass of Sun	Alpha vir	Virgo
	Fomalhaut 2 x Mass of Sun	Alpha PsA	Piscis Austrinus (Southern)
	Proxima Centauri 1/8 of Mass of Sun	Alpha Cen	Centaurus
	Barnard's star 1/10 of Mass of Sun		Ophiuchus
	Altair 2 x Mass of Sun	Alpha Aql	Aquila
	Sun		
	Van Biesbroeck's star (red dwarf) 8/100 of Mass of Sun	VB 10	Aquila
Red Giant	Pollux 2 x Mass of Sun	Beta Gem	Gemini
	Arcturus 1 x Mass of Sun	Alpha Boo	Bootes
	Aldebaran 1.5 x Mass of Sun	Alpha Tau	Taurus
Super Giant	Betelgeuse 11 x Mass of Sun	Alpha Ori	Orion
	Antares 7 x Mass of Sun	Alpha Sco	Scorpius
	Rigel 23 x Mass of Sun	Beta Ori	Orion
Planetary nebulae	Dumbbell nebula	M27	Vulpecula
	Ring nebula	M57	Lyra
	Cat's eye nebula	NGC 5463	Draco
	Helix nebula	NGC 7293	Aquarius (Southern)
	Owl nebula	M97	Ursa Major
	Eskimo nebula	NGC 2932	Gemini
White Dwarf / Black Dwarf	Siruis B 98% of Mass of Sun		Canis Major
	Procyon B 6/10 of Mass of Sun		Canis Minor
Supernova	Crab nebula	M1	Taurus
	Veil nebula	NGC 6992 / 95	Cygnus
	Witch head nebula	IC 2118	Eridanus (Southern)
Neutron star- Pulsars	Crab nebula	M1	Taurus
	PSR B1257+12		Virgo
Blackhole	Cygnus X-1		Cygnus
	NGC 6240		Ophiuchus
	NGC 4261		Virgo
	NGC 4151		Canes Venatici
	V404 cygni		Cygnus
Supershell (Superbubble)	HI supershell in M101		Ursa Major
	Orion-Eridanus Superbubble		Orion