An interview was undertaken with the pupil and it transpired that she envisioned a robot that could help tidy up her toys, light up and guide her to the bathroom though a dark house at night, and to make sure it had claws. We took those ideas and have been trying to develop something that would meet as many of these feature requests as possible given the time limit.

We have made progress with the build having a dual wheel, self-balancing robot as a basic chassis that further features can be added to (attached photos). We are designing it so it lights up and will follow a line on the ground that can lead the child from the bedroom to the bathroom. A body has also been developed to encase the robot, taking design inspiration from the drawing provided by the pupil (also attached).

 We have attempted to meet all the pupils’ requests but have been exceptionally time limited, and so prioritised the baseline features and safe operation of an autonomous robot, which has scope to be expanded on later, given additional time.  
  
In later iterations, we would love to add an interactive screen that would enable the robot to show personality and emotions, we could add additional sensors, including machine vision which would allow the chassis to navigate the environment with more autonomy, and even allow it to track and follow coloured targets, worn by the user or placed around the operational environment, and we would like to enable users to communicate commands to glowbot vocally, using natural language processing, and have the robot respond in a calm tone to reassure the user.

We envisioned further add ons that may be possible with this platform and the navigational software being developed for glowbot, that could include the ability for the robot to pull a cart behind it while following the pupil around the room, assisting in tidying up toys and teaching stewardship of our surroundings.

We had some issues in devising the best way to enable the robot to navigate autonomously. Given the limited development time, we selected a line following algorithm to ensure that it would not get lost on its way from point A to point B. Further to this, the robot contains additional sensors to detect obstacles in its path, for which it can either stop moving and wait for the obstacle to be removed, or attempt to navigate around the obstacle.

We are going to have the head & torso sections of the outer enclosure printed in the coming days and all constituent parts placed on the robot for evaluation and debugging.