





<p>4</p>	<p>Now we are going to look at the IoT and how it works with consumer appliances. There are various ways in which the IoT is integrated into the home. This is called Smart Home.</p> <p>Smart Home uses modern automation systems to provide a practical way of controlling electronic devices in the home. Smart Home technology can include, but is not limited to, the scheduling and automatic operation of heating, lighting, electrical and security systems.</p>	
<p>5</p>	<p>For generations, the newest and smartest product in the house was the latest piece of technology. A microwave, a colour TV, the Internet. Now the smartest pieces of technology are those items that we've had in our homes for years. Lightbulbs you can turn on and off remotely. Heating you can adjust on your way home from work and doorbells that stream who is at your door!</p>	
<p>Knowledge check – What is streaming?</p>		
<p>6</p>	<p>Firstly, we are going to look at security. According to Which, a smart home security system is a set of an internet-connected security gadgets, which typically include a combination of wireless security cameras, sirens, motion detectors, door locks, and sensors that detect when a door or window has been opened.</p>	 <p>The above image is of a smart lock that can be locked or unlocked from your smart phone or tablet computer.</p>

7	<p>Knock, knock. Who's there? If you have a smart doorbell, you already know as the doorbells come with handy apps that are activated when the doorbell is rung, or motion is detected, displaying a HD quality video of whomever is at your door. They come with 2-way audio, so you can have a conversation with whoever is knocking at your door and save any video taken to the cloud, so you can access it later if need.</p>	 <p>Imagine being alone at home and the doorbell goes late at night, these doorbells will allow you to see who is there without leaving the sofa. Having a parcel delivered and you've just popped out? You can tell the delivery driver a safe place to leave it until you return!</p>
<p>Knowledge Check</p> <p>What is the cloud?</p> <p>Use a search engine and see how much smart doorbells cost.</p>		
8	<p>Next, we are looking at smart heating but before we do, we are going to clarify the difference between smart meters and smart heating.</p>	
9	<p style="text-align: center;"><u>Smart Meters</u></p> <p>A smart meter is a new kind of gas and/or electricity meter that digitally sends meter readings to your energy supplier allowing them to give you more accurate bills. They often come with a display, so you can see how much energy you are using and get a better understanding of your home energy usage.</p>	<p style="text-align: center;"><u>Smart Heating</u></p> <p>Smart heating is where you have a smart thermostat, linking your device with your home heating system. This then gives you remote control via a tablet computer or smart phone of your homes temperature.</p>

<p>10</p> <p>Hive, a company owned by the same organisation that runs British Gas, are registered as a home automation company. They offer similar services to Phillips Hue, but their speciality is in helping you control your heating remotely. As of May 2018, Hive has over 1 million customers!</p>	
<p>11</p> <p>A typical thermostat lets you change the temperature in your home using a dial whereas a smart thermostat gives you more efficient, user friendly and accessible control using 3 basic components.</p> <p>The first component plugs directly into your boiler and allows it to talk wirelessly with the second component, the in-home smart thermostat. This thermostat is then controlled by the third component, an app downloaded onto your device allowing you to adjust the heating whenever you want.</p> <p>Some of the newest smart heating systems allow you to set schedules, complete actions when you reach certain destinations and even turn on automatically should it get cold enough for your pipes to freeze!</p>	 
<p>Knowledge Check – How much money, on average, will having a smart heating system save you per year?</p>	

12 Next, we are going to look at smart speakers. Smart speakers such as the Amazon Echo and the Google Home are virtual assistants for the home. If you are a user of Google services, then the Google Home works brilliantly with all the services you use. Ask your Google Home to 'Tell me about my day' and it will inform you of any events you have in your Google calendar. You can use it to help with trivia like you would the Google search engine, find out what the quickest route is to get to work using Google Maps and even talk you through a recipe you've found on the internet!

If you want to learn more about Google Home, ask your volunteer and they can help you access a guide.



13 Next, we are going to look at lighting. Companies like Phillips, LIFX and TP-Link allow you to control your lighting from anywhere in the world, have different colour lighting in the room of your choice and the power to dim/brighten the lighting all from your connected device.



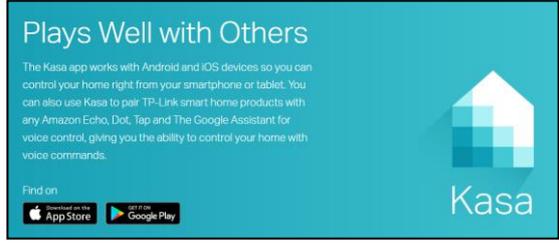
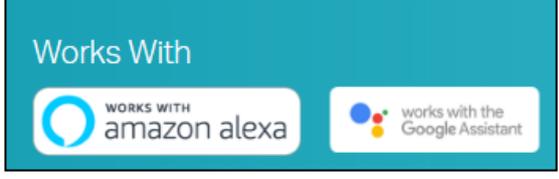
Knowledge Check – How much does it cost to purchase the following IoT devices?

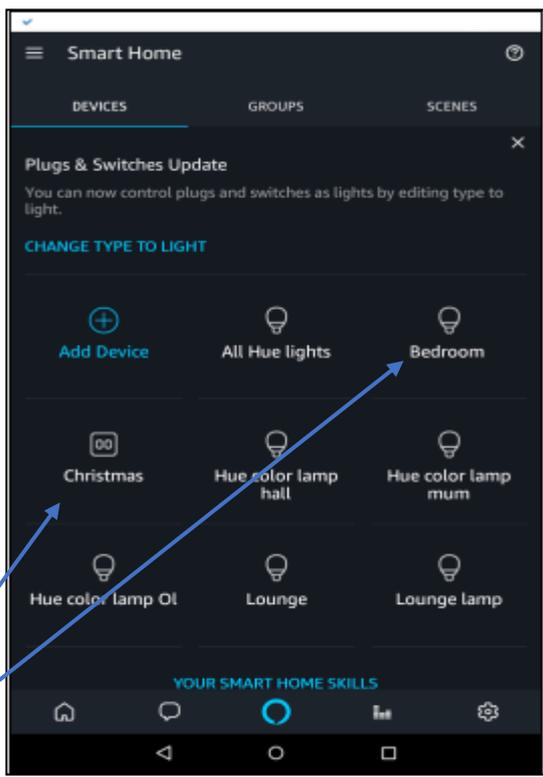
Phillips Hue White and Colored Starter Kit from [www.currys.co.uk](http://www.currys.co.uk) –

HIVE Active Heating Multizone from [www.currys.co.uk](http://www.currys.co.uk) -

Google Home Mini from [www.currys.co.uk](http://www.currys.co.uk) -

<p>14</p>	<p style="text-align: center;"><u>Pros</u></p> <ul style="list-style-type: none"> <li>• Most IoT home appliances will help you save money as it increases the efficiency of the devices as they learn to adapt to your behavior.</li> <li>• They are convenient in the sense that you can turn on your kettle whilst still in bed and turn on your heating when you are on your way home.</li> <li>• This remote monitoring can help with insurance incentives as some insurers will reward homeowners who update their homes with smart technology.</li> </ul>	<p style="text-align: center;"><u>Cons</u></p> <p>The IoT isn't without its issues though.</p> <ul style="list-style-type: none"> <li>• Some of the devices require complex programming and setup.</li> <li>• A lot of the best products are made by different companies and so operate on different networks.</li> <li>• Often IoT devices are expensive up front even if they do save money in the long run.</li> <li>• There are safety concerns regarding the possibility of internet enabled devices being hacked.</li> </ul>
<p>15</p>	<p>Finally, we are going to use some smart home technology, by looking at a TP-Link smart plug.</p>	

<p>16</p>	<p>A TP-Link smart plug plugs into your regular sockets at home but can be remote accessed through a smart phone or tablet computer using a free app. The app, Kasa, is available through both Android and iOS and allows you to schedule the plug to turn on and off electrical products at certain times. Imagine being able to control what lights are on whilst you are away from your home. You can do this all using a smart plug, your smart device and the Kasa app.</p> <p>For those with smart assistants in the home such as Amazon Alexa or Google Home, the TP-Link smart plug can be linked to them and you can use voice activation to control the plug.</p>	 <p>Plays Well with Others</p> <p>The Kasa app works with Android and iOS devices so you can control your home right from your smartphone or tablet. You can also use Kasa to pair TP-Link smart home products with any Amazon Echo, Dot, Tap and The Google Assistant for voice control, giving you the ability to control your home with voice commands.</p> <p>Find on</p>    <p>Works With</p> <p>WORKS WITH amazon alexa</p> <p>works with the Google Assistant</p>
<p>Knowledge Check – What is Android and iOS?</p>		
<p>17</p>	<p>We are now going to use the TP-Link smart plug to control electrical products. We are going to use it for the mundane - turning on a lamp, and the fun - controlling our Christmas tree.</p> <p>To control the smart plug, we are going to use an Amazon Echo Dot and the Alexa smart assistant.</p>	

<p>18</p>	<p>Prior to this session, we have preloaded the smart plug itself onto the tablet computer, using the Amazon Alexa app. This is free to download from the app store of your device. Once you have downloaded the app you have to pair the smart plug, with the Amazon Echo Dot under the Smart Home menu giving it a name of your choice so it knows how to identify it.</p> <p>On the right is a screenshot of the Smart Home menu screen on the Amazon Alexa app. We have named the smart plug 'Christmas' as it will be controlling the Christmas tree and the smart bulb 'Bedroom' as the lamp will be going in our bedroom.</p>	
<p>19</p>	<p>To get the Amazon Echo to complete tasks you must first say 'Alexa' in a clear and confident voice. You'll notice the speaker top becomes rimmed with a blue light. This blue light indicates that the Amazon Echo speaker is actively listening for commands.</p> <p>Waiting between the initial 'Alexa' and your command is important as you need to give the Amazon Echo time to begin to listen to you before issuing any command.</p>	
<p>20</p>	<p><u>Tasks</u> Say 'Alexa' and then ask it to 'Turn on Christmas. What happens? How would you turn it off?</p>	<p>Say 'Alexa' and then ask it to 'Turn on Bedroom'. What happens? How would you turn it off?</p>