

iBYTES

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The social networking debate: good or bad?

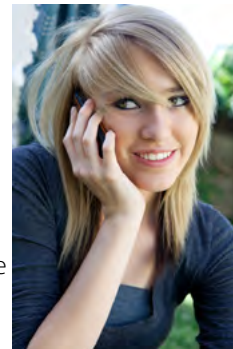
How has social networking changed the way we live our lives?

Introducing Grace and Jane:

Jane was born in the 1960s; in 1974, at the age of 11, she started secondary school and had to catch the school bus from her house to the school. She joined the local Girl Guides where she attended meetings every Monday night. In those days, Brownies and Girl Guides were taught that there were certain essential items they should always have in their pocket; one of these items was a two pence piece so they could make a phone call from a telephone box in an emergency.



Grace was born in 1990; in 2001 she started secondary school and also had to catch the school bus to school. Her favourite past-time is video gaming on her Xbox with her friends, either at home or online. When Grace left school she bought herself a smartphone so that she could keep in contact with her friends all of the time, using social networking as well as texts. In her hunt for a job, Grace turned to YouTube. She made a video of herself, promoting herself, as with a written CV but using video and narrative instead. She posted it on YouTube, with links from her other social networking profiles, and hopes that this is the way forward in standing out from the crowd in the job market. Over 14 million people in 2011 used social media to find their last job.



pre-arrange with her mother what bus she was going to get home and if she missed the bus or the bus was late, she would phone, using her two pence piece, from the phone box next to the bus stop so that her mother knew she was going to be late home. When Grace goes out with her friends, she uses her smartphone to text her mother to tell her when she's on the way home.

Grace likes to use social networking sites to keep up to date with all her friends' latest news and she updates her own status nearly every day, for other people to view. Grace has over 100 online friends and visits social networking sites several times every day, either on her smartphone or on her computer or on her Xbox. When she sees something she likes, Grace goes to a product's Facebook page and 'likes' it. Recently she 'liked' Starbucks, being one of 27 million people who have done the same.

This is great news for the businesses that get 'liked', as if Grace has 100 friends who see her 'like' and some of them – connected to another 100 friends – do the same, the potential for viral marketing is huge.



Jane is now in her 40s and has set up her own small cake-making business, selling cakes to her local community. She has realised the potential of social networking and has set up a Facebook profile and also has a Twitter account in an attempt to increase her business. Jane posts several tweets a day telling her customers about the products for sale that day and she will usually bake a special 'product of the week' which she tweets about. Jane's cake business has built up a loyal following and her customers will often tweet and retweet (share a tweet already posted by someone else) about their favourite products. Jane uses her Facebook profile to advertise her business and to look at customers'



When Jane was a teenager and wanted to communicate with her friends, she would use the home phone to ring them up and have a chat. Her father was always timing her to make sure the phone calls didn't last too long and so cost a lot of money! If Jane and her friends wanted to spend time together they would arrange to go round to each other's houses or meet up in town to go shopping. Jane would

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Many big companies use social networking to communicate with their customers, giving us, the consumer, more knowledge of the companies and more say in what they sell. Sainsbury's is just one of many companies that use Facebook. At Christmas 2011, Sainsbury's customers wrote on the Facebook site that they wanted chocolate sterling pennies to put on their Christmas trees, rather than the euros that were on sale at the time. As a result, Sainsbury's re-introduced chocolate pennies in time for Christmas. They advertised their Deal of the Day, using their Facebook wall the day before Valentine's Day, to advertise a bunch of flowers still available to buy.



Travel companies such as National Rail use Facebook and Twitter profiles to keep their passengers informed of how services are running. Trentbarton in Derbyshire used regular updates on Facebook and Twitter, in February 2012, to let passengers know which services were running or not due to bad snow. Not only did this help some people plan a route home from work safely but it was also an excellent way of 'humanising' their business and gaining the support of people who felt they were kept informed about travel.



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suggestions. At Christmas, one customer asked on Facebook if she could sell gingerbread houses, which led to several other local people repeating that request. As a result, Jane produced gingerbread houses as her product of the week, in the week before Christmas, which led to several new customers. A lady who lived many miles away also saw the Facebook request and the subsequent tweet when the item was being sold and asked if Jane could make a customised gingerbread house for a birthday cake. This led to Jane expanding her business to offer mail order items on request.

Jane uses her Twitter account within her cake-making business to:

- Send her customers special offers, such as a deal of the day to purchase six hot cross buns for the price of four in the week leading up to Easter
- To facilitate online ordering for customers
- Use as a viral marketing tool, to spread the word to potential customers through her own customers' tweets and retweets
- To 'humanise' the business and communicate regularly with her customers
- Receive suggestions/complaints from customers.

Grace and a group of her friends went on a backpacking holiday for three weeks to Malaysia and the surrounding area. While away, they wanted to be able to easily communicate to everyone back home what they were up to, what they'd seen and to let their families know that they were OK. They decided to set up a blog, with links to the blog from their individual social networking pages. They took photographs of themselves on their smartphones and then, when they were staying in an area that has WiFi access, they would easily upload their photographs to the blog and write a message about what they had been doing. Their parents and friends could all see what the group of friends had been doing and knew they were alright and having fun.



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Is there an argument against social networking?

In August 2011, Great Britain saw riots flare up in several cities, with people becoming involved in looting, violence and destruction. Apparently, the riots were fuelled by social networking, most notably BlackBerry's BBM service but also Twitter and Facebook. A third of teenagers between the ages of 12 and 15 own a BlackBerry, partly because it is a smartphone but predominantly because of its free BBM service which enables teenagers to be in contact with all of their Blackberry-owning friends almost instantly and with privacy not necessarily available on Facebook or Twitter. So rioters were able to arrange looting ahead of arriving at the scene, let everyone know where to congregate, and the riots continued.



On Boxing Day 2011, an Asian student was shot dead in Salford, a victim of an apparent race-hate attack. The student's parents learned of his death from Facebook, and were understandably extremely upset. Should this be the way that a parent learns of the death of their child? The tragedy occurred because posting to a social networking site is instantaneous and presumably the person who posted to Facebook didn't think of the consequences – something we should all learn from.

We've all heard about cyberbullying, which easily occurs on social networking sites. Cyberbullies might post unkind, abusive comments onto someone's wall. They might put photos of others on their own profile with the intention of ridiculing a person; they might make a derogatory comment on a picture or video someone has posted on their own profile; they might even set up false profiles pretending to be someone else. Approximately 90% of teenagers have witnessed some form of unkindness to another person on a social network.



Cyberbullying does happen and we should all be on our guard not to unwittingly become part of it by viewing posts from cyberbullies, laughing at unkind posts or commenting on them. Cyberbullying can lead to victims taking drastic action when they become very unhappy.



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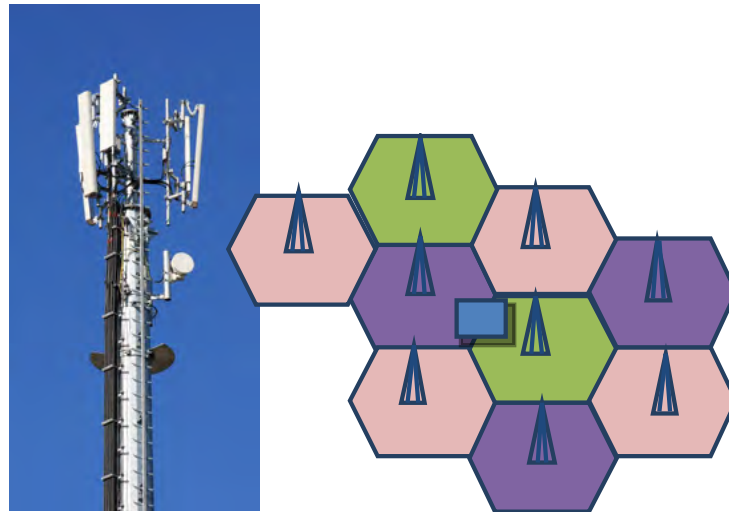
Mobile phones – What's that all about?

Cisco predicts that by the year 2016 there will be more connected mobile devices than people. They also predict that the 150 megabytes of data currently being used by the average smartphone will become 2.6 gigabytes by 2016. Networks are under stress now, so how will they cope with these new demands?

Let's take a quick look at how mobile, or cell, phones work.

The mobile phone is basically a radio. The phone uses low-power radio to communicate with network cells. These cells are laid out in an overlapping grid pattern with a transmitter/receiver at the centre of each one. Each area has a control centre that transfers any calls or data through its networks to the destination.

With so many transmitters so close together, the transmitters, or masts, have to use a low-power signal, and masts next to each other transmit on different frequencies. The receivers are connected by land-based lines to the central base station that controls all the cells in a particular area.



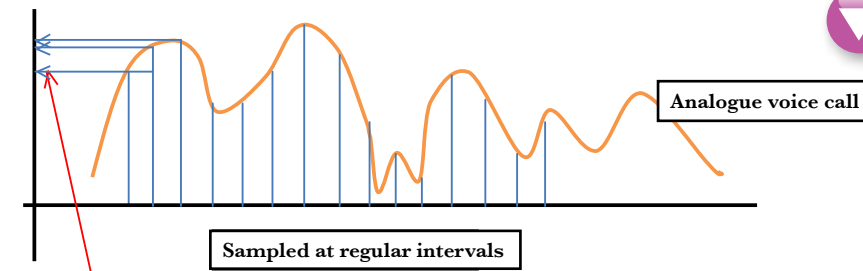
Every phone service provider uses a unique code, SID (**S**ystem **I**dentification number). When you buy a phone, a set of preferred SID numbers is pre-programmed into the phone. When the phone is on, it constantly listens for a control signal on a special frequency reserved for this purpose. If the SID it receives is the correct one for the phone service provider, it registers with the base station. The control centre is then able

to track the phone through the area, accepting and transmitting any calls via the cell transmitter.



If the phone is moving, the control centre keeps track of the signal, and as it fades, it is able to identify the registration in the adjacent cell. When the device moves into the new cell, it switches the calls to the new transmitter without interrupting the call or data transfer.

Digital phones are able to compress the signal from the phone, in much the same way as we compress music tracks for mp3 players. By compressing the data, we are able to send more data through an analogue radio connection. The current compression techniques used can squash ten calls into the same stream as one analogue call, but for our future needs this is not enough.



The value at each sample point is used to create the digital file to be transmitted. So, instead of a continuously varying value, it is able to transmit a series of discrete values that represent the same data.

To cope with the increasing demands on mobile communication and data access, these companies are using techniques developed in computer networking. These techniques have been developed to handle significantly more data. So let's look at how IP addressing and packet switching are being used to handle the increasing demands on the networks.

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An IP (Internet Protocol) address is a number allocated by a server to a device that is within its network. It uses a unique code built into the device during manufacture to identify the device, the Electronic Serial Number or IMEI (International Mobile Equipment Identity). The IP address is allocated when the device registers with the control centre and is used to identify the device as it moves between cells in the control centre area. If it moves to another area, the control centres communicate with each other, the new control centre allocates an IP address, and control is passed to the new area.

By using this IP address, the system can locate the device at any place within its network and no longer needs to maintain a constant communication channel between the control centre and the device.

The data that is to be transferred to the device is broken up into a set of small packets, each with:

- The source IP address, i.e. the device sending the data
- The destination IP, i.e. who the data is being sent to
- Length of the packet in bytes
- The total number of packets being sent and the number of this packet in the whole list of packets being sent.

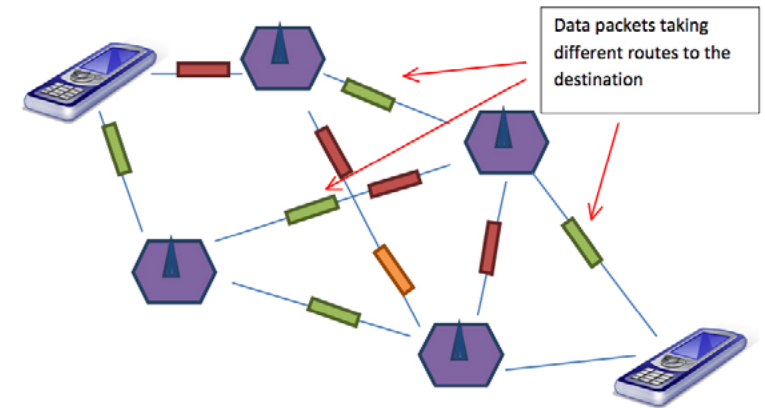
10 units of data to be transferred from A to B

From A to B 1/5, 2 units	From A to B 2/5, 2 units	From A to B 3/5, 2 units	From A to B 4/5, 2 units	From A to B 5/5, 2 units
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The sampling reduces the amount of data and, when it is divided up into small packets, the data can mingle with other data packets on the network without being lost. The data may not arrive in the same order as it was sent, but the information in the header allows the device to put the data back into the correct order. It may take a little time, but the data is put into a buffer (temporary store) until there is enough to reassemble and use. (Hence the message 'buffering' that appears on the device from time to time.) Data packets may even take different routes to the destination if the device is registered with more than one cell. But, since

all the packets are clearly identified with their destination and place in the sequence, the conversation or data transfer can be reassembled into the correct order at the destination.

Using this approach to data transmission through the cellular network, suppliers are able to utilise the existing bandwidth more effectively and deliver the sort of service we expect to be available in the not too distant future.



Application for teaching purposes:

In this issue of *iBYTES* the concepts of mobile communication and data compression are both relevant to our GCSE ICT and GCSE Computing specifications.

GCSE ICT

Unit 2.1.1 Hardware; communication devices

Unit 2.1.2 Communications

Unit 2.1.9 ICT and modern living

Unit 2.3.1 Hardware; communication devices

Unit 2.3.5 Communications

Unit 2.3.10 Current and emerging technologies

IP addressing, data compression using sampling, and data transfer over a network are concepts relevant to our GCSE Computing.

GCSE Computing

Unit 2.1.1 Fundamentals of computing systems

Unit 2.1.4 Compression

Unit 2.1.6 Networks and internet

This issue can be used to show how the relevant concepts apply to more than standard networked personal computers and to reinforce how computing concepts apply to everyday life.


Additional useful support material for these topics can be found on:


www.wikipedia.com

www.howstuffworks.com

www.teach-ict.com

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Do you have a **passion** for technology?

Do you have a passion for a technological area? Do you have a lot of knowledge of this area? Do you think that you could write an **iBytes** document using that knowledge? We are on the lookout for imaginative and dynamic teachers to write **iBytes** documents. They should be informative, exciting to read and centred around a recent technological development. They should also strongly and visibly link to our **GCSE in ICT** or **GCSE in Computing** specification.

If you feel that you could contribute an **iBytes** document, please email Julian Parkin on julian.parkin@ocr.org.uk



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