Chapter 66
Game-Based Learning as a Promoter for Positive Health Behaviours in Young People

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ABSTRACT

Maintaining the healthcare of young people living with long-term medical conditions is dependent upon them acquiring a range of self-care skills. Encouraging them to attain these as well as assessing their competency in them beyond the healthcare setting is challenging. The development of educational computer games like Health Heroes, Re-Mission, and Sparx have been shown to successfully improve self-care, communication, and adherence to medicines in young patients. Therefore, this medium might be an alternative means for delivery of healthcare information. In this chapter, we propose that by encapsulating healthcare processes in Game-Based Learning (GBL) either by computer games or by applying the principles of gamification, a more fun, structured, and objective process would be created, one to which young people can relate. The framework we suggest will provide doctors with an insight into how GBL could be used positively in a healthcare setting as well as provide a basis for application to other disciplines where knowledge and skill acquisition can be challenging.

BACKGROUND

Many people are now expected to live longer than in previous generations. With this increase in life expectancy the incidence of age-associated long term illness is also predicted to rise (WHO, 2013). Nearly 133 million Americans (Bodenheimer, Chen, & Bennett, 2009) and 15 million United Kingdom (UK) citizens (DoH, 2011) live with a long term medical condition. Two thirds of all deaths in the USA are attributable to conditions such as cancer, diabetes, lung disease, heart disease or stroke ("Tackling the burden of chronic diseases in the USA", 2009). In the UK mental and behavioural disorders (including substance abuse) and musculoskeletal conditions are some of the major causes of long term disability. Long term medical conditions are not restricted to the elderly; young people may also experience conditions such as cancer, asthma, diabetes, cys-

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tic fibrosis, heart disease or (juvenile) arthritis. Approximately 14% of young people in the UK live with a long term medical condition (Hagell, Coleman, & Brooks, 2013).

As young people grow older patterns of health promoting as well as health risk behaviours are established which can be maintained throughout their life (Sawyer, Drew, Yeo, & Britto, 2007). Activities such as unhealthy diet, drugs and alcohol misuse, smoking, physical inactivity, and unsafe sexual practices can lead to poor health outcomes (Murray et al., 2013). If a young person is already living with a long term illness engaging in health risk behaviours can further complicate their condition. Smoking can accelerate the development of heart disease in diabetics (Grundy et al., 1999); alcohol can enhance the toxicity of medications (Nash, Britto, Lovell, Passo, & Rosenthal, 1998) whereas drug therapies can affect fertility and can potentially cause birth defects (Janssen & Genta, 2000). Research has shown that health risk behaviours can be more common in young people with long term conditions with greater potential for adverse health outcomes in them (Sawyer at al., 2007; Suris, Michaud, Akre, & Sawyer, 2008; Philpott, 2011).

Care for a young person with a long term medical condition is on-going and ideally will adapt to their needs as they grow older. If they are diagnosed during childhood their care will be in an environment which is focused towards theirs and their family's needs. Their condition may persist over time and even follow them into their adult life. This means that they will eventually have to transfer to the adult healthcare system which is very different from that which they were used to as a child. In the UK this normally occurs between 16 and 18 years of age but is more dependent upon local policy rather than the young person's confidence in being able to cope in the new setting. Transfer can be a cause of anxiety to both the young person and their family as they will have to experience a new healthcare environment. If the transfer is not managed appropriately there is an increased chance that the young person will "drop out" of the healthcare system (Wacker et al., 2005; Yeung, Kay, Roosevelt, Brandon, & Yetman, 2008), risking poorer health outcomes (Annunziato et al., 2007) and subsequently be re-admitted to hospital (Yeung et al., 2008; Nakhla, Daneman, To, Paradis, & Guttmann, 2009).

In order to maintain the continuity of a young person's care careful and purposeful planned preparation for transfer is important (McDonagh, 2007), this is known as transitional care. It addresses the medical, psychosocial, educational and vocational needs of the young person in an age and developmentally appropriate manner. As the young person matures the responsibilities for their care moves away from the parent requiring the young person to acquire a range of knowledge and skills that are important for them to function independently in the adult healthcare system. These include understanding of health and condition specific issues, self-management skills, effective information-seeking skills, managing psychological and general health, effectively utilising the healthcare available to them, coping with social issues, maintaining their education and vocation aspirations as well being able to live independently.

Adolescence (10-19 years of age (WHO, 2001)) is considered to be one of the most sensitive developmental periods next to early childhood (Viner et al., 2012) Therefore this is a time when positive health behaviours can be influenced and where preventative healthcare strategies should be focused (Catalano et al., 2012). Educational resources to support the needs of young people's healthcare are very important but many patients and their families find it difficult to get the information they need and it is not always in appropriate style for them (Shaw, Southwood, & McDonagh, 2004). There is interest in how information can be presented in a youth friendly way and how technology can be used to support this (Stinson et al., 2008). It has been proposed that new forms of communication which are used and enjoyed by young people such