Chapter 63
Perceptions of Play:
Using Play-Doh to Enhance the Student Experience in Bioscience Higher Education

Gemma Lace-Costigan
University of Salford, UK

ABSTRACT

Playful and kinaesthetic learning approaches are used in numerous early years (birth to 5 years old) learning environments, however studies in HE STEM disciplines are uncommon. This study aimed to explore the use of Play-Doh in an undergraduate anatomy module as a method of enhancing engagement. 63 students attended the 'kinaesthetic play' lecture, where students worked in teams to make a variety of epithelial cell types using Play-Doh. Before and after the activity, students were asked to 'choose one word to describe how you feel'. Before the activity, 48.3% of responses were negative (E.g. confused, worried, childish). However, after the activity not a single negative response was recorded. 98% of students reported that they enjoyed the activity and 84% reported that the activity increased their understanding. This data suggests a utility for kinaesthetic playful practice in STEM teaching. Overcoming initial student perceptions towards alternative teaching practices is a challenge to be considered during session design.

INTRODUCTION

The concept of playful learning is well researched and has formed the foundation of early years educational teaching methods (Piaget, 1999, Kangas, 2010, Broadhead et al, 2010). Engagement of adult learners through playful practice has been demonstrated in a few studies (Rice, 2009; Nerantzi et al, 2015), however there is relatively little research into the role and potential for playful learning methods in higher education (HE), particularly in STEM subject teaching including biological and biomedical science. Defining 'play' for an adult learner is difficult but in 1999, Henricks proposed that play could be considered an experience that has intrinsic (rather than extrinsic) motives, so that someone would choose to participate in that activity for the experience of participation alone and that learning is not the primary driver of participation. Henricks also postulated that the process of play was more impor-

DOI: 10.4018/978-1-7998-1204-3.ch063

tant than the end result and play should involve some degree of active engagement. When students are completely captivated by a playful activity, Csikszentmihalyi (2013) proposed a state of mind called 'flow' where deeper learning can be achieved in both adults and children. Incorporating playful learning activities in adult learning environments therefore has the potential to increase learning whilst enhancing student experiences and satisfaction which has been reported to occur as a consequence of 'flow' (Csikszentmihalyi, 2013).

Learning models that incorporate kinaesthetic elements such as the VARK (visual, aural, read/write, kinaesthetic) model developed by Neil Fleming, have been well described across numerous subject disciplines (Fleming & Mills, 1992). VARK learning style assessments are still used in HE in an attempt to enable learners with the information that will allow them to make informed choices about the way they select learning materials, study and prepare for exams. Within the biological and biomedical science disciplines, students are often encouraged to contextualise their learning through kinaesthetic means such as active participation in laboratory practical experiments or anatomy dissections. 'Learning through doing' or experiential learning (described by Kolb, 2014) is therefore a common practice within STEM teaching/learning. However, the kinaesthetic learning activities used often lack a creative dimension and often involve following step by step protocols to achieve a desired end result. There are limited opportunities for creative or explorative learning within some of the common kinaesthetic activities associated with science teaching and this may restrict the amount of deeper learning that can occur. There are countless texts describing the importance of providing opportunities for creativity within learning environments (Beghetto, 2015; Cropley, 2001; Mayer, 1989). However, it is unclear if these kinds of activities would be enjoyable or beneficial to HE STEM students, particularly those studying on biological or biomedical science programmes.

The field of cognitive psychology has generated a multitude of research describing how to increase engagement and promote learning. It is known that memories are enhanced during emotional arousal (Dolcos et al, 2004) and for a long time neurobiologists have researched the cellular basis of 'emotional learning' (LeDoux, 1992). Understanding that a student is more likely to remember a specific lecture (and associated content) if an emotional response is instigated during the lecture is something that can be exploited by academics when designing teaching sessions. Historically, individual students may have been targeted with questions during traditional lectures, or asked to stand in front of peers and take part in a demonstration which would most likely trigger a fear or an 'adrenaline' response in the participating student. The activation of a fear response may induce avoidance behaviours (LeDoux, 1992) which may lead to decreased lecture attendance. Whilst this method may have been successful in promoting increased attention in lectures (and memory of them afterward), this may not always have led to positive student experiences. With mental health issues such as anxiety on the increase in undergraduate student cohorts (Williams et al, 2015), it may be time to try and promote more positive emotional responses in lectures.

There are a number of challenges posed by teaching STEM subjects, for example, having to teach large cohort numbers. The need to teach large numbers of students at any one time may restrict the kind of learning environments available for use, for example, teaching may be restricted to the use of large lecture theatres with static furniture. Issues associated with 'crowd control' may deter academics from trying more adventurous and novel teaching styles. Teaching staff may also be required to cover a significant amount of complex course content in a relatively short period of time and the requirements of accrediting bodies may mean the curriculum lacks flexibility. Many STEM students may begin to feel overwhelmed by the volume and complexity of course material that is covered in a single teaching session. Additionally, research has reported that 59% of students find lectures boring half the time and