

# Using simulations in higher education study: an analysis of student perceptions of simulations' pedagogical and other benefits

## Introduction

The aim of this paper is to contribute to a small but growing body of empirical evidence on the benefits participants derive from active learning environments like simulations (Duchatelet et al., 2017; Levin-Banchik, 2018; Oberle et al., 2017; Rünz, 2015) which despite its growth is still considered “limited” (Baranowski and Weir, 2015). In fact, the corroboration of simulations’ reported effectiveness remains “rather anecdotal” (Bursens et al 2019; Chin et al., 2009; Hofstede et al., 2010). While much existing and ongoing work has quite a large US bias (Ishiyama, 2013) and seeks to quantify the outputs and outcomes of active learning environments like simulations in terms of higher student performance or higher engagement and interest (Raymond, 2010; Shellman and Turan, 2006), this paper seeks to provide evidence of the understudied aspect of simulation participants’ lived experience of these contexts and what in their own words they perceive to be the most significant benefits.

Simulations are teaching methods that fall into a larger body of teaching strategies often-labelled as ‘active learning techniques’ or, more recently, ‘student-activating learning environments’ or ‘active learning environments’ (Ishiyama, Miller and Simon 2016; Krain, Kille and Lantis 2015; Lantis, Kille and Krain 2010).

In line with Krain and Shadle (2006: 52), in this article, simulations are understood as those learning situations in which students are placed ‘within a reasonable representation of a real environment within which political or social interactions occur’. The focus here is on political simulations, that is, simulated political deliberation or decision-making environments.

The use of simulations within HE and, in particular, in social sciences courses is not new. Indeed, practical examples of their empirical usage can be found stretching back at least to the 1950s across a variety of disciplines, from law to psychology to politics (see Bloomfield and Padelford 1959; Goldhamer and Speier 1959; Guetzkow 1959). To date, the vast majority of scholarship analysing the use and efficacy of simulations as a tool for learning has been quantitative in nature, with a commensurate gap in qualitative studies; a point

acknowledged in Moughrabi and Wallace's (2015) work on applied simulations in nursing education, who argue that "[a]dopting a mixed methods model through the use of interview or focus groups would also provide valuable insights into the students' experiences". In addition, much of the literature to date focuses on the interest boosting effects and the subject level learning impact of simulations. This paper broadens this, by seeking to provide evidence of students' acquisition of generic skills through taking part in simulations.

In order to explore participants' perceptions of and attitudes towards simulations the paper proceeds as follows. First, the rationale behind the academic community increasingly adopting simulations as a pedagogical tool is explored to shed light on what existing literature says about simulations' pedagogical value. In the second section, this study's methodological approach is set out. Following this, the study's key findings are presented before being discussed in the fourth discussion prior to some concluding remarks and recommendations.

### **The pedagogical value of simulations**

The range of pedagogical value associated with simulations is broad in its scope. In this first section we briefly consider the different perspectives adopted in the existing literature; differences that reflect the multiplicity of benefits attributed to simulations.

A number of scholars have argued that, through interaction with others, simulations lead to more efficient and stimulated learning. Cobb (2000), for example, suggests that through the process of mutual inquiry and reflection, an individual's learning is enhanced, whilst the interaction itself produces efficiency gains by facilitating peer learning. The importance of the self-reflection aspect is supported in work by Druckman and Ebner (2013) who argue that simulations contribute to students' affective learning development by developing empathy, appreciation of the complexity of the real world and learning regarding the self. It is through this process that simulations enhance student engagement by providing an opportunity to apply new knowledge learnt to actual situations. Other studies support this, arguing that, by providing a means to study the real-world implications of new knowledge, simulations enhance depth of learning due to their ability 'to recreate complex, dynamic political processes in the classroom, allowing students to examine the motivations, behavioural constraints, resources and interactions among institutional actors' (Smith and Boyer, 1996, p.690). Thus simulations provide incentives for students to truly engage with the learning process as they allow them to observe and understand the real-world application of abstract ideas, theories and concepts, leading to deeper understanding (Clayton and Gizelis 2005). Scholars have, for example, emphasised the interactive aspect of simulations, arguing that this promotes an intrinsic desire to participate as this leads to the development of social relationships (Hromek and Roffey 2009; McCarthy 2014).

It seems, then, that simulations offer a means for deeper learning around a particular issue. However, studies have also been undertaken into other rationales for using simulations. Heard-Laureote et al's (2019) work on simulations in outreach, for example, found that they could be used to portray universities as having contemporary relevance and being innovative and enterprising destinations for prospective students. Thus, simulations can positively influence the image of disciplines like political science which might otherwise be considered dry, staid or theoretically complex, depicting them instead as interesting,

exciting and accessible. The use of simulations therefore fit with current discourse and policy landscape on access and participation in HE, whilst also according with the requirements of the UK-based Quality Assurance Agency for Higher Education (QAA). This agency benchmarks UK politics and international relations degrees, promoting the use of a range of learning methods, with an appropriate balance of lectures, seminars, workshops, student-led and tutor-led sessions and skills-based, discussion based and knowledge based classes as well as placements, field trips and simulation exercises (QAA, 2015, p.14).

It is now well-established in the health sciences that simulations enhance peer-to-peer learning. Moughrabi and Wallace (2015), for example demonstrated the importance and utility of simulation in the education of nursing students. Their study showed that simulation was a valuable experience in advancing students' learning and clinical performance and, importantly for this paper, that engagement in peer-led simulation was effective in increasing students' generic skills including judgement, prioritization, goal setting and confidence (Moughrabi and Wallace, 2015, p.23). In addition, they found post-simulation debriefing an important driver of reflective learning, as students discussed obstacles, barriers, and successful strategies related to communication, problem solving, and critical thinking.

Through their recreation of real world situations, simulations can assist students with understanding the mechanics of complex political decision-making settings (Usherwood, 2015; Hertel and Millis, 2002). By assuming the role of a particular actor and in operating within the constraints of the character, simulation participants are able to develop a deeper and more nuanced awareness of a situation than would be the case through more conventional learning strategies (Usherwood, 2015).

One of the primary drivers for the use of simulations as a pedagogical tool is the assumption that they will boost student interest and that this, in turn, will enhance students learning. Indeed, the impact of simulations on the levels of interest of students enrolled at university has been considered in several studies (Asal and Blake 2006; McKeachie 1986; Schnurr et al. 2014; Shellman and Turan 2006). However, there seems to be a division in the literature between those who believe simulations arouse students' interest in the subject of study covered by the simulations (Belloni 2009; Shellman and Turan 2006); those who contest any causal relation between simulation and levels of interest (Raymond 2010; Raymond and Usherwood 2013); and those who argue that simulations might actually decrease levels of interest (Schnurr et al. 2014; Smith 2012). This is perhaps most starkly demonstrated in Schnurr's (2014) work, which showed three outcomes from simulations. Firstly, students reported a small increase in appreciation of the complexity of issues; secondly, that participation in simulations caused a significant decrease in interest; thirdly, that there was a decrease in perceived practical skills as a result of undertaking the simulation.

Within the literature which provides evidence to suggest that simulations provide interest boosting effects, these are typically associated with affective learning outcomes (LOs) as opposed to cognitive (enhanced learning) or regulative (enhanced reflective skills) learning outcomes. Affective LOs relate to the feelings that arise during learning experiences that create an emotional state that may positively, neutrally or negatively affect the learning process (Vermunt and Vermetten 2004). Research on the use of active learning environments like simulations within political science mostly characterise these affective

LOs as *interest* (Bridge and Radford 2014; Zaino and Mulligan 2009) or *motivation* (e.g. DiCicco 2014; Jones and Bursens 2015). Sparking university students' individual interests is significant because these are 'enduring' and 'trait-like' and thus they 'can have a powerful influence on people's lives, by impacting how they choose to spend their free time ... [and] the trajectory of students' careers after college' (Harackiewicz and Hulleman 2010, p.44). Indeed, research demonstrates that university students who are interested in a topic tend to engage more with material, to interrogate concepts more freely and rigorously, to lose themselves in pursuit of topic-related knowledge, and to sustain levels of engagement over time (Ainley, Hidi and Berndorff 2002; Hidi and Baird 1988; Hidi and Renninger 2006; Schiefele, Krapp and Winteler 1992).

Enhanced student engagement cannot be explained solely by the scope for students to use simulations to apply new knowledge to actual situations, however. Rather, research shows that students enjoy simulations and that this enjoyment promotes increases in student participation, motivation and preparedness compared to traditional teaching modes (Raymond and Usherwood, 2013). For some scholars, the link between simulations and student interest is not related solely to the topic of study. Instead, the interactive nature of simulations brings its own benefits, as participation leads to the development of social relationships (Hromek and Roffey 2009; McCarthy 2014). Nonetheless, the added enjoyment would seem to foster an increased interest in the topic, leading to improvements in attendance and the duration of students' pre-reading and preparation (Shellman and Turan 2006). It seems reasonable, therefore, to assume that simulations are a credible teaching tool but it is clearly important to consider the pedagogical issues involved.

This brief overview of existing literature on the pedagogical value of simulations indicates eight key benefits to their use as a teaching tool:

1. Enhancing broader subject level knowledge
2. Enhancing specific topic area knowledge
3. Enhancing attributes considered positive by academic community i.e. presenting, public speaking, cultural awareness, enhancing responsiveness, reasoning, self-awareness and reflection, working through/with complexity
4. Increasing aspiration to undertake HE study
5. Acquisition of professional skills i.e. Negotiation techniques, debating, seeking compromise
6. Understanding of mechanics - i.e. understanding how a simulation works
7. Fun/entertainment/enjoyment/interest (motivation & engagement over time)
8. Peer-to-peer learning

To analyse the extent to which students perceptions of the value of simulations was congruent with the benefits identified in the literature, this study adopted a qualitative methodological approach as outlined in the next section.

## **Methodology**

The simulation activities that are the focus of this study were undertaken as part of 'Teaching Young People European Studies' (TYPES) - part of a larger Jean Monnet/Erasmus plus project led by the UK's University Association of Contemporary European Studies (UACES). This is an organisation of scholars and practitioners who share a commitment to

teaching and researching contemporary European studies (UACES, 2019). Under the auspices of the TYPES project, funding was provided to a project steering group (of which the lead author is a member) to develop and facilitate the conduct of a series of EU simulations for UK-based secondary school pupils. The UACES TYPES Steering group collaborated with three UK HEIs - the Universities of Portsmouth; Loughborough and Newcastle. Ten schools from different areas of the UK participated in the simulations discussed in this study between 2015 and 2018. Participants took part in one of two scenarios: the first revolving around free movement in the EU in the context of Brexit; the second focusing on the issue of free movement in the context of the refugee crisis. In each scenario, pupils assumed the roles of UK and French/European officials as well as affected parties such as local community or business representatives. In both simulation topics, participants were invited to debate their positions whilst two of their colleagues moderated the interaction. The aim was for participants to reach a consensus.

Academics from the partner universities met with participants' teachers some days before each simulation to discuss the nature of the activity and to provide course material and guidance for the day. On the simulation day itself, pupils were supported and guided, again by academics from one or more of the HEIs involved. On occasions, they were also supported by UG or PG students from the partner Universities who had, themselves, experienced political simulations during their degree studies. In all but one case, the groups reached a consensus.

A two-stage survey of participants was carried out, with written questionnaires distributed before the simulation ('before'/'pre') and again immediately after the simulation ('after'/'post'). Analysis of the qualitative data from these questionnaires forms the evidence base for this article.

Between twenty and thirty pupils at each school/college were invited to participate. In some cases, the lead teacher targeted invitations at those pupils they believed to be most interested in taking part. Importantly, participation was voluntary, with the activity presented as an enrichment activity.

At the close of the simulations, participants were invited to give free-text responses to open questions as part of a post-simulation survey as follows:

1. What did you learn at today's event?
2. What did you find the most useful from today's event?
3. Do you have any other comments about the day?

The participants' responses to these particular questions comprise the qualitative data-set analysed for this paper. In total, analysis of 139 anonymous post simulation questionnaires has been undertaken for this article.

To analyse the data, a coding scheme was developed using the eight categories outlined in the literature (see above) around scholars' perceptions of simulations' key pedagogical benefits.

CODE	ASSOCIATED SCHOLARSHIP
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1	Enhancing broader subject level knowledge i.e. learning about the EU	Belloni, 2009; Shellman & Turan, 2006
2	Enhancing specific topic area knowledge i.e. learning about free movement/Dover-Calais crisis	Smith & Boyer, 1996
3	Enhancing attributes considered positive by academic community i.e. presenting, public speaking, cultural awareness, enhancing responsiveness, reasoning, self-awareness and reflection, working through/with complexity	Cobb, 2000 Druckman & Ebner, 2013 Hromek & Roffey, 2009 McCarthy, 2014 Harackiewicz & Hulleman, 2010 Dengler, 2008 Asal & Blake, 2006 Moughrabi & Wallace, 2015
4	Increasing aspiration to undertake HE study	Heard-Lauréote et al, 2019
5	Acquisition of professional skills i.e. Negotiation techniques, debating, seeking compromise	Baranowski, 2006 Fletcher, 2001
6	Understanding of mechanics - i.e. understanding how a simulation works	Usherwood, 2015 Hertel and Millis, 2002
7	Fun/entertainment/enjoyment/interest (motivation & engagement over time)	Raymond & Usherwood, 2013 Bridge Radford, 2014 Zaino & Mulligan, 2009 DeCicco, 2014 Jones & Bursens, 2015 Heard-Lauréote et al, 2019 Ainley, Hidi & Berndorff, 2002 Hidi & Baird, 1988 Hidi & Renniger, 2006 Schiefele, Krapp & Winteler, 1992 Chasek, 2005 Cutler & Hay 2000 Kurtz, 2004
8	Peer-to-peer learning	Moughrabi and Wallace, 2015

Through a thematic coding approach, participant responses to the three open-questions were assigned to the most appropriate category. The remainder of the paper now turns to a discussion of the key findings and their discussion.

## Findings

Given this study's focus on the simulation participants' personal experiences of simulations and in gaining an understanding of the specific benefits they actually derived from participating in them we invited participants to reflect on the benefits accrued from simulations. Our aim therefore was not to count or quantify the frequency or prevalence of the eight coding categories. Rather, we sought to focus on those areas where respondents provided the richest free-text responses to questions in order to test the extent to which the various benefits cited in the literature were supported by the data. The aim of this section is thus to illustrate the benefits accrued as understood by the simulation participants in their own words.

Analysis of the questionnaires showed that participants most strongly articulated their personal experience of the simulations in relation to the acquisition of professional skills such as negotiation techniques, debating and seeking compromise. An interesting predominant feature of the participant commentaries on professional skills acquisition was the complexity they perceived and the challenge they experienced in relation to debating, negotiating, cooperating and achieving compromise. Many simulation participants described this process as either "hard", "extremely hard", "difficult" or "harder than it seems". Despite the demands they experienced, as one respondent noted, the predominant learning outcome of the simulated learning context was a greater understanding and awareness of the "intricacies of negotiating on a global scale and how difficult it is to agree on a deal everyone agrees on".

The second most strongly espoused benefit of participating in the simulations was the opportunity to take part in a learning environment that they found enjoyable. A potent feature of the commentaries in relation to this was the high entertainment value derived from the experience with comments such as "fun", "productive", "engaging" frequently recurring. Participants appeared to surprise themselves in relation to the extent that initial negative predictions about the event in the end gave way to highly positive dispositions to the activity. For example, one participant, although initially "dreading it" found that they actually "really enjoyed it" while another noted that "it was a lot more enjoyable and less nerve wracking than I anticipated". The enjoyable features appear to centre on the ability of simulations to deliver interesting and informative content in a dynamic and engaging mode and format. For example, one participant declared that they "Loved it! Really brought EU to the foreground of something interesting to study and specialise in". Simulations as an antidote to more traditional learning methods were clearly articulated in the words of one particularly eloquent participant who noted:

I feel that a simulation of this style is an effective educational tool. I anticipate being able to remember issues that have been highlighted today more so than I would from a conventional method of learning. It was engaging and would be a good thing if aspects of the national curriculum could be taught in this way.

Overall therefore, it seems that purely based on the fun-factor, the simulations were "a good experience" for the participants that they would "recommend" to their peers - a widely acknowledged endorsement of the highest order for this age-group.

Two other perceived benefits were almost equally referred to in respondents comments. The first of these related to the enhancement of specific topic area knowledge, with participants commenting on the clearer understanding they had gained of the wider

implications of issues such as free movement and the Dover-Calais crisis: “Learning about...the ideologies of both the eu and uk [Sic]...brought to light some issues that I hadn’t thought of before - like students studying abroad, for example”. A further perceived benefit concerned the development of general academic skills required in HE, such as presenting, public speaking and working with complex issues, with comments such as “It also built on personal skills like confidence and the ability to argue formally (debate) which reached a smart agreement”. In addition, participants noted that the ‘in character’ nature of a simulation spurred the development of more general attributes of cultural awareness, enhancing responsiveness, reasoning, self-awareness and reflection, with participants recognising and reflecting on the benefits of having to “...think on my feet in a persona that did not meet my own view” and “...having to reason with people you strongly disagree with! A skill I need to work on”.

It is of note that in their open free-text comments none of the participants made reference to the value of peer learning in the simulation and rarely mentioned an increasing aspiration to undertake HE study<sup>1</sup> as a result of these (a significant point taken up in this paper’s conclusions). Indeed, only one respondent specifically noted that they derived benefit from the event based on it providing “insight to courses that university has to offer”.

It would appear, therefore, that from the perspective of the participants, simulations are valued chiefly for their capacity to engender a set of professional skills (negotiation techniques, debating, seeking compromise) in an enjoyable and engaging way. In addition, participants almost equally valued two other benefits; namely, subject specific knowledge acquisition and the facilitation of attributes considered positive by academic community such as presenting, public speaking and reflection, working through/with complexity as a means to boost participants’ self-confidence.

## **Discussion**

Whilst recognising the earlier distinction made in our discussion of the academic literature - a distinction that was subsequently taken forward in our coding scheme for data analysis - it makes sense when discussing the findings to acknowledge that both transferable skills (Assiter, 1995) and professional skills (Jackson, 2016) contribute to students’ wider personal development. As such, we situate both these categories within the increasingly used term generic skills. This usually infers three main skill sets:

1. Relational skills - communication and team work
2. Cognitive skills - analytical and critical thinking, learning, organising and planning skills
3. Technical skills - IT (Suleman, 2017; Schmidt & Van der Molen, 2001; Badcock & Pattison & Harris, 2010).

Generic skills development has been of growing importance on the HE agenda in recent years, with its application to employability expected to produce a more seamless transition into the labour market. In the UK this evolution has been accelerated nationally by UK

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<sup>1</sup> However, it should be noted that this was examined in more depth in a recent study (Heard-Lauréote, 2019).

policies, NSS, student value-for-money as a result of higher student fees and the Bologna process (cf. Clark & Martin, 2016; Sin & Neave, 2016).

At the EU level, this has been driven by the European Commission through for instance the New Skills Agenda launched in 2016 and the inter-governmental Bologna process that made “employability” a major goal for the European Higher Education Area (EHEA). All of this has taken place within an international context of the massification of HE, increased competition between HEIs, league tables which rank HEIs on graduate employment, as well as youth unemployment and the ever-evolving global labour market as a response to new technology development. It is unsurprising therefore that students’ acquisition of generic skills to promote employment opportunities is evermore important and that a discourse has thus developed around the need for students to become “employable” individuals (cf. see Sin & Neave, 2016). Moreover, it is increasingly seen to be the responsibility of HE institutions to provide such training (Sin & Neave, 2016; Crebert et al, 2004 (Australia), Mohan et al. 2010 (USA)) through, amongst other things, the integration of generic skills in university programmes (Lee, Foster & Snaith 2016).

As the findings above suggest, participants taking part in simulations most strongly articulate the benefits of doing so in terms of the development of their generic skills. This finding is interesting because these aspects are considered the most directly relevant to looking beyond pedagogical learning gain in a given subject towards exploring the wider transferable skills acquisition which these simulations deliver. Moreover, practical skills acquisition is important because it plays a role in graduate employability. In the UK context, employability emerged under the auspices of the 1997 Dearing report which stated:

To survive in the labour market of the future, workers will need new sets of skills, to work across conventional boundaries and see connections between processes, functions and disciplines and, in particular, to manage the learning which will support their careers.

The notion’s reach is far wider however - diffused particularly across Anglophone countries (cf. BIS 2011; British Council 2013; CHEC 2013; UNESCO 2012; Novoa 2007) - and has been endorsed by supranational agencies and networks such as the Organisation for Economic Cooperation and Development (OECD 2008a; 2008b), the World Bank (2010), the World Economic Forum (2016) and the European Higher Education Area (Bologna Declaration 1999). A key result of this trend is that today within the HE sector generic skills have become as important to graduate recruiters as subject-specific knowledge (Harvey, 2000).

### **Conclusion: Lessons learned and recommendations for the future.**

The aim of this paper was to add to the growing body of empirical evidence relating to the benefits participants derive from simulations. With much of the existing literature being quantitative in nature, this paper’s originality lay in adopting a qualitative approach. In so doing it sought to shed light on the views of participants as expressed in their own words through open-ended questions in a pre and post simulation survey.

The main finding resulting from this exploration of participants’ lived experience of the simulations is that these activities are valued chiefly for their capacity to engender a set of

transferable and professional attributes which can be broadly captured under the umbrella label of generic skills.

The implications of simulation participants deriving the most benefit from generic skills acquisition are that these contribute to students' wider personal development and have been linked both in HE political discourse and in individual HEIs' institutional discourses to employability. As such, the finding that participation in simulations acts as a vehicle for developing generic skills is particularly relevant to our understanding of the embedding of employability in pre-university settings as a HE outreach mechanism.

In terms of recommendations for the future, the paper noted an almost complete absence of specific comment by participants in their post-simulation questionnaire responses concerning the benefit of simulations in raising their aspirations about transitioning to HE. Given that outreach was one of the main drivers for establishing the simulations discussed in this paper, this could be interpreted disappointingly. However, it may be the case that simulations' contribution to easing transitions between school and HE and de-mystifying the university campus are indirect factors which are better evaluated in the long term. This is because these may constitute diffused benefits of simulation participation which are not so much felt immediately following their delivery. Rather, the benefits may be reflexive in nature: considered by participants chiefly when determining their next steps after secondary education. Nonetheless, this dimension cannot be overlooked in the context of planning and organising future events. It may be that if we want students to understand these activities as aspiration raising and motivators to accessing HE then we need to explicitly state this at the outset rather than assuming that this will be inferred.

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