

Learning through Simulation or Simulated Learning?

An Investigation into the Effectiveness of Simulations as a Teaching Tool in Higher Education

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1. Introduction

Traditional pedagogical techniques are still very much the norm within higher education. Student learning remains largely based upon extracting knowledge from texts and lectures, or methods based around the metaphor of acquisition (Sfard 1998). This style of teaching rarely gives students the opportunity to apply their newfound knowledge to actual situations, resulting in a serious time lag between students learning and applying new knowledge (Raymond 2010). As a result many students have trouble determining the relevance of what they are being taught, and thus lacking any obvious incentive to learn fail to truly engage with the learning process (Dorn 1989:6).

It was this lack of student engagement that motivated us to begin the project upon which this paper is based. While teaching a Masters level module on negotiation and mediation, we have become frustrated with students' who consistently failed to apply simple theoretical concepts to 'real life' situations. With this in mind we turned to the pedagogical literature, and observed the increase in teachers who had begun to embrace the benefits of a more interactive style of teaching (Hodkinson, Hodkinson 2001). In particular we noted the rise across a number of disciplines in teaching literature that was focused upon role-plays and simulations. In this sense there seemed to be a lots of authors proclaiming the benefits of these methods that it was argued should lead to more efficient and stimulated learning (Cobb 2000).

Yet despite the growing popularity of this method, it seemed that little work has been done to determine the impact of such methods. Thus while intuitively many promoted the belief that innovative methods of teaching should improve student learning, it appeared that there was little firm evidence to support this.

Thus viewing role-play simulations as a potential method through which to overcome our teaching challenges, we set about on a project that we hoped would better equip students to apply theoretical ideas, while at the same time providing a valid assessment as to the impact of role plays / simulations upon student learning. More specifically we focused the research part of the project upon two questions that dealt with different key areas of the teaching experience: Do role-play simulations enhance

student's comprehension of theoretical concepts? And do role-play simulations foster an increase in the levels of student preparation and participation?

In order to answer these questions a program of simulation exercises was developed for adoption within a Masters level module within the School of Politics and International Relations at the University of Kent. This innovative and varied program sought to provide students with the opportunity to immediately apply theoretical knowledge in a practical setting. It was hoped that this practical element would improve theoretical comprehension, knowledge retention and student participation.

This paper will now progress to a brief summary of the literature we drew on when developing this program, present the hypothesis we sought to test followed by the results of the project both in terms of student grades and satisfaction. Finally a brief conclusion will be offered.

2.0 Literature Review

2.1 What are simulations?

What is defined as a role-play and/or a simulation is not immediately clear from the teaching literature. For the terms are often used interchangeably or confused with similar methods such as 'games' and 'gaming' (Shaw 2010). However, there seems to be a convergence on the correct terminology (Smith and Boyer 1996). As Krain and Shadle (2006) have suggested simulations are best considered as those cases in which students are placed 'within a reasonable representation of a real environment within which political or social interactions occur' (Krain and Shadle 2006: 52) Alternatively role-play exercises typically provide fewer set instructions regarding the roles the students are asked to play, and instead students are asked to determine how they would respond in a certain context (Shaw 2010). In this sense the student should "inhabit the issue (making it more real and immediate) and think beyond their own perspectives" (Scott 2001:347). Both role-plays and simulations can take place in either the classroom or within an online/virtual environment. Games are something

different, a context with clearly defined rules regarding how players can win the exercise (see for example Asal 2005; Young 2006).¹

The use of role-plays and simulations within higher education is not a new development. Examples can be found stretching back over fifty years across a variety of disciplines including law, psychology, business and politics (see Bloomfield and Padelford; Goldhamer and Speier; Guetzkow). Both methods fall into a larger body of teaching strategies often-labeled 'active learning techniques'. This form of teaching also includes group discussions, debates, collaborative projects and internships. In essence this can include any method that asks students to help develop and apply their own knowledge (Shaw 2010).

2.2 What are the benefits of role-plays / simulations?

Much of the early literature centered upon these more active methods of teaching, in particular simulations, was generally focused upon preaching the benefits of this method (for example see Robinson et al 1966; Greenblat 1973; Shade and Paine 1975; Lester and Stoil 1979; Bredemeier and Greenblat 1981; Ruben and Lederman 1982; Lederman 1984; Thatcher 1990; Petranek et al 1992). For it was suggested that simulations offered a means through which students could engage with complex social processes in a manner not encouraged by merely reading books or listening to lecturers (Shellman 2001: 827). Thus rather than create an environment where the onus is on the teacher to teach and the student to listen, role-plays/simulations force students to apply themselves to a particular situation. This more active method is believed to be better than more passive methods at developing deep learning, and facilitating the development of more innovative and creative thinkers (Dorn 1989; Brock and Cameron 1999; Shellman 2001; de Freitas 2006).

In general the positive utilities attributed to role-plays and simulations within the literature can be summed up in three broad categories: depth of learning, student engagement, transferable skills development.

¹ In this paper we focus on role plays and simulations.

2.2.1 Depth and Breadth of Learning: The first group of benefits attributed to simulations relates to the suggested improvements in overall student learning. For much of the literature has stressed the increased levels of cognitive learning this more active style of teaching can stimulate. For as Smith and Boyer (1996: 690) have suggested, ‘Simulations have the power to recreate complex, dynamic political processes in the classroom, allowing students to examine the motivations, behavioral constraints, resources and interactions among institutional actors’. In this sense it is argued that students can become fully immersed within real decision-making processes, allowing the content of the course to become more relevant as the applicability of certain ideas and concepts become apparent. This deeper immersion is meant to bring about a deeper understanding. Moreover when students become engaged within simulations based upon real world situations, they become immersed in practical examples of abstract theoretical constructs.

Building on this notion a number of scholars have suggested that this form of teaching improves both knowledge retention and long-term student learning (see for example Silberman 1996; Hertel and Millis 2002). For by engaging students on a more emotional level, this form of teaching creates more enduring and easily recalled memories. (Clark and Paivio 1991; Martin 1993).

Yet despite the long list of publications supporting this notion, producing solid evidence to support this position is challenging. For while ‘it may be relatively easy to measure whether students have learned factual information, it is more difficult to design measures of analytical and negotiation skills that are gained through simulation experiences.’ (Shaw 2010). Moreover assessing the long-term impacts of such process is of course yet more of a problem. As a result despite multiple projects seeming to compare the benefits of ‘active’ in relation to ‘traditional’ teaching methods, no one approach has been shown to be superior (Shaw 2010).

2.2.2 Student Engagement: The second broad group of benefits ascribed to simulations within the literature relates to positive effect that the method produces in terms of student engagement. For the more enjoyable and practical nature of role-plays have lead many to suggest that role-plays and simulations generate greater student participation and satisfaction than the lecture-seminar format (Henley 1993).

Moreover in addition to increased class participation, it has also been suggested that simulations lead a greater participation in the wider learning process, through shared reflection and discussion amongst students outside of the classroom.

In addition to the increase in course engagement scholars such as Newmann and Twigg (2000) have suggested that simulations can also promote better relations between the student and the teacher. By creating a more open, relaxed and collegial atmosphere in the classroom, the increased interactions improve student satisfaction with the teacher. This effect might also be the result of additional benefits that might occur for the instructor. For simulations can foster an exciting, energetic and engaged teaching environment. This is particularly welcome in classes that are being taught repeatedly and thus have the potential to turn stale without some more exciting and original elements. Finally from the instructors perspective the benefits of simulations in terms of providing a mechanism through which quick feedback can be provided to the students and in turn gain a feel as to how students are progressing is also supported in the literature (Wheeler 2006).

Supporting this idea, teachers such as Shellman and Turan (2006) have reported an increase in student participation, motivation and preparation for simulation exercises. Using measures such as attendance, amount of reading completed, time spent preparing, and desire to continue the specific area of studies, the scholars noted big increases relative to traditional methods of teaching.

2.2.3. Transferable Skills Development: The final broad area of support for simulation based teaching relates to a specific skill set developed through this method that are not generally well cultivated through more traditional methods. For example professions such as law, social work, planning, politics and health care each use some form of simulation to develop, practice and test students ability to apply communicate, argue and negotiate with others in a manner that applies theoretical ideas in a practical sense. In this sense the skills developed are highly transferable, as to communicate and negotiate effectively with others are core life skills.

In addition to developing more practical skills, it has also been suggested that simulations can more efficiently redefine attitudes and perceptions of participants. For

as Greenblat (1973) has argued, this form of learning is better equipped to foster empathy of others' positions and thus impact some form of change in actors perceptions of others. This finding has received partial support from a number of studies (Pierfy 1977, Morgan 2003).

2.3 How confident can we be in these benefits?

However not everybody is convinced as to the strong positive effect of simulation based teaching. For in countenance to those that preach the benefits of most active methods, other such as Jones (2003) have suggested that while simulations may increase student engagement, students can often struggle to understand what they are learning in these interactive contexts. Moreover a variety of published materials have stressed a number of potential problems with this method. For example the fact that simulations produce winners and losers can create conflict within the classroom, confusing details risk losing students attention, and too much instructor involvement increases the already extensive teaching burden (Jones 2003).

Support for this position has also been found in two of the only systematic studies undertaken in this area. In both instances despite the increased levels of student satisfaction, little comparative advantage was discovered in terms of the knowledge benefits of more active teaching methods (Raymond 2010 and Wentworth and Lewis 1975). In addition the critics point to the lack of overwhelming evidence to support the more effective nature of simulations. In particular the fact that many of the 'evaluations of the effectiveness of simulations were methodologically weak and flawed by research design, sampling, or other methodological problems' (Shaw 2010). For often simulations are not designed in a manner that stands up to basic tests of validity, and thus the only method of evaluation relates to the subjective assessments of either the students or the teacher (Sasley 2010). Thus evidence is generally anecdotal, not standardized or quantified. Further measures of satisfaction could well be far removed from genuine academic worth, for students may simply enjoy playing the games, rather than undertaking the more standard methods of teaching.

There is thus a real lack of clear empirical evidence to support the above stated benefits. As a result scholars and teachers are both still seeking to understand the extent to which role-play simulations are beneficial in the higher education context.

3.0 Project Motivation

Having surveyed this literature we viewed the application of simulations as a potential method through which to overcome some of our teaching challenges. We sought to develop student understanding of the main concepts and techniques used in bilateral and multilateral negotiations, while introducing students to the main theoretical schools in mediation and negotiation, and relating the theory to the practical problems involved in the resolution and management of conflict. In our teaching we had grown frustrated with students consistently having difficulties applying theoretical arguments to ‘real world’ situations. Moreover we (as with most teachers) were consistently striving to enhance student engagement and enjoyment within the course.

The benefits discussed above seemed to offer an effective solution to this problem, but we wanted evidence to support the generally positive claims. As a result we decided to translate the above literature in support of simulations into a number of testable hypothesis, in an attempt to produce a more scientific enquiry into the effect of simulations.

Having studied the three broad groups of benefits discussed above the following two we derive two empirical hypotheses.

1: The use of simulations as a teaching tool increase students’ comprehension of complex theoretical concepts in relation to modules that are taught solely with the traditional lecture/seminar format.

2: Students preparation and class participation increase in modules that use simulations in relations to modules that are taught solely with the traditional lecture/seminar format.

In this iteration of the project, we are not investigating areas such as skill

development and long-term learning due to difficulties in operationalising these concepts.

4.0 Research Design

4.1 The Program Design

Having determined that the use of simulations and role plays might have a positive effect upon our students learning experience, and subsequently formulated a number of research hypothesis that we wanted to investigate, we set about attempting to formulate a mixture of methods that would meet the needs of a diverse student population and stimulate student engagement both in and out of the class room. This program was designed to occur within a master's level module within the School of Politics and International Relations at the University of Kent.

A number of academic works have discussed the importance of the simulation design considerations (Orbach 1977; Greenblat 1980, Greenblat and Duke 1981) and we wanted to ensure we produced the most effective package. In this sense we focused upon designing the program of simulations to meet specific learning outcomes and course objectives. But more so we recognized the importance of appealing to different student demographics (Shaw 2010). For as studies such as Shade and Paine (1975) have suggested, different learning styles may cause different students to gain more from certain methods than others.

Reflecting this finding we thus sought to include a mixture of simulation methods. To begin we employed two face-to-face simulations taken from the Harvard School of Negotiation. These had the advantage of being pre-written and were thus easy to purchase and apply upon the course. However, both our own and others' previous experience had shown that some students struggle to engage within face-to face settings (Wikenfeld 2006). For while certain students thrive on the challenge of negotiating in person, more introverted students often fail to express themselves

within such settings as the more powerful characters within the group often overwhelm the group and dominate discussions.

For this reason we developed two web-based simulations that allowed the students to undertake the simulation within an online environment. The first of these exercises was undertaken with an American institution, and negotiated via email. This method had obvious advantages, for given the time lag between emails, students had sufficient time to carefully plan actions, and build a strategy in the manner we were attempting to teach them in class. In addition to this two-week long exercise, we also designed and implemented a short two-hour online simulation, which was completed in an online chat room (which we also set up for the exercise).

These exercises allowed us to replicate conditions completely inline with the module's learning outcomes, and incorporate those areas that we felt were not covered sufficiently within the Harvard 'canned' simulations. For example key concepts such as pareto efficiency, that were not easily applicable to the Harvard simulations, were accentuated within our own exercises. In addition both simulations were based upon real contemporary conflicts, which we felt made it easier for the students to relate to the different roles. Taken together the simulations sought to foster what Rubin and Lederman (1982) referred to as discovery learning (learning through the process) and mastery learning (improving understanding through practical application).

In total we utilized four different simulations that ranged from two hours to two weeks in length. In total they equated to approximately one third of the total course teaching time, giving the students extensive exposure to this method of learning. Importantly it is worth observing that while simulations are undertaken within other taught causes both within the University of Kent and other institutions, on our course simulations were an integral component of the teaching rather than secondary element.

Each simulation required the students to prepare thoroughly before attending, as only with a solid understanding of the material would they be able to successfully negotiate

their case. In the aftermath of each simulation, a debrief session was held in which we discussed what had occurred in the simulation and related this back to the theoretical arguments that we were trying to develop. In this sense the crossover between the students' experiences and the theoretical literature on negotiation and mediation was stressed and the parallels between their experiences and real cases of international negotiation highlighted. Finally one of the modules assessments was reconfigured into a reflective essay, in which the students were asked to assess both their own and others participation within the sessions and relate this to theoretical notions. This was undertaken in order to provide additional incentives to engage with the simulations, and impacting learning through feedback processes.

4.2 Assessing the Effectiveness

Having redesigned the module around the new program of simulations, we were then required to devise some method in order to assess the effectiveness of this program. Firstly in order to assess the impact of the simulations upon student learning, in particular the students' comprehension of theoretical concepts, we first compiled the grades upon the completion of the course. The assessments on this module were set up as a mixture of highly theoretical written assignments, and one reflective paper assessing the students ability to reflect on both others and there own practical application of the course content.

Having compiled the grades we then compared the results of student performance in this module to the performance of students within the same module in the previous year. We feel that this comparison should provide a valid indication as to the impact of the simulations, as the teaching team, course content, and learning outcomes remained very close in both years. In this sense we felt that this method of assessment held most of the teaching variables constant, with the key independent variable, simulations, being the only factor that core factor that changed across the years.

However one area that this method failed to account for is the variation in student ability. While the entry requirements on the masters program at the University of Kent remained the same across the years, it is certainly a possibility that the ability of the student upon the negotiation and mediation module changed across the years. To

account for this variation we also performed a second analysis. The second analysis instead performed a comparison between the grades of students enrolled on our module, with the other modules that the same students had completed in the same academic year. In each of these other modules no simulations were undertaken. While it is certainly not a scientifically valid test, it should at least offer a primitive control for the variance in students' ability. To control for the marking preferences of our teaching team, we looked at the students' performance in a different conflict analysis module also taught by the same teaching team that was taken by over 80% of the students upon the negotiation module.

In addition to the analysis of student grades we also distributed two questionnaires to each of the students on completion of the course. The first of these was a standard departmental evaluation undertaken within all modules. This was used to assess the student satisfaction, attendance and a self-assessment of their effort. In this case students were asked to rank a number of statements from 1(not at all) to 5 (very much). This was compared to other politics modules.

Secondly we administered a further questionnaire that sought to measure student opinions on, and responses to the simulations specifically. Students were presented with a number of statements such as, "Simulations help me to understand theoretical concepts"; "Practically apply parts of the course has helped my comprehension in general"; "The Simulations on this course did not help me in this course in anyway" and asked the students to rate each comment out of five (1 = strongly disagree, 2 = disagree, 3= no sure, 4= agree, 5= strongly agree). Finally students were also given the opportunity to provide a qualitative assessment of the simulations, with the inclusion of a comment box on the questionnaire.

Gauging the manner in which simulations impacted upon the level of preparation and participation of the students, as well as the impact upon their understanding is certainly rather challenging. For operationalizing these concepts in a valid manner is difficult. Of course a number of problems are always likely to emerge from questionnaires, not least the subjective nature of the results. However given the problems such as self-selection of sample groups and lack of effective controls

(Powner and Allendoerfer 2008), which have plagued previous works, we believe this method offers a significant improvement on existing studies.

Finally it should also be noted that all students were informed of the nature of this study, and gave verbal consent for the analysis. Moreover a university representative provided ethical approval.

4.0 Empirical Results

The first phase of the analysis involved collating data on student grades. Using the student records we collated information on student grades in the previous academic year, which as previously suggested were to act as a control group for this analysis. In this group of students the mean student grade was 61 and the median 60. This grade was typical of the average grade amongst politics students that academic year (mean and median 61). We then compared these marks to the year of our test group. Within our negotiation module (which had included the simulations), the mean mark rose four marks to 64, while the median increased by five to 65.

This seems a notable difference, but could perhaps be attributed to a higher quality of student enrolled that year. However the yearly average grade showed a very minor reduction in comparison to the previous year (mean and median 60), thus in general the increased grade does not seem attributable to a generally stronger quality of student at the University of Kent that year. However perhaps an element of self-selection occurred, with the stronger students opting for the negotiation module for some unobserved reason. To control for this effect we then compared the results of our students to their performance across other modules. The results of our analysis were quite striking. For of all the modules undertaken by students that participated in our course, the negotiation and mediation module achieved the highest average mark. Within the twenty other masters level courses undertaken by our students, their mean grade ranged from 56-63 in relation to our mean of 64.

In addition to this finding a number of additional areas of note emerged from the data. Twenty-two of the thirty-five students who took the simulation course achieved their highest mark within this module. This equates to 63 per cent of students achieving their best grade in the module that included simulations. Further, thirty-three of the

thirty-five students all achieved a mark in the negotiation module that was above their mean mark for their course in total. It is also worthy of note that each of the students also took at least one other module led by the same teaching team that ran the negotiation module. In this other module the marks were in line with the departmental mean, suggesting that it was not our style of teaching or marking that was responsible for the higher marks within the negotiation module.

These results provide some notable support in favor of hypothesis one. For given the highly theoretical nature of the course assignments, and the notable increase in course grades, the results seem to suggest that by practically applying what was being taught in the lecture/seminar part of the course, the students comprehension of theory was improved. While this is certainly not a totally scientifically valid test, it does provide preliminary evidence as to the academic success generated by this program of teaching development., and thus are generally supportive of hypothesis one.

The second phase of the analysis then shifted the focus to the results of the two questionnaires. As was discussed above the first of these surveys was a standard departmental form distributed to all students enrolled on a politics module. The results were very positive. Firstly in relation to class preparation the students were asked to assess their own effort levels within the module. The average grade for the course was 4.8 out of 5, 1.1 points above the departmental mean. Moreover, when reporting on their class attendance 33 of the 35 students suggested that they had attended every class. This result was also far higher than within any other module. This seems generally supportive of the idea that students invest more in terms of preparation and participation than they would normally do for more traditionally taught modules.

In addition to these important questions, the module also scored above average on every indicator measured, including the usefulness of course content (4.8 out of 5), appropriate opportunity for discussion (5 out of 5), and in support of the first hypothesis, theoretical aspects were well covered (4.8 out of 5). When reviewing these results as part of a periodical program review, the director of learning and teaching suggested that:

Sometimes a particular module stands out in terms of the student comments regarding their experience with the lectures and seminars. The postgraduate module in Negotiation and Mediation in the academic year 2009-2010 was one such module. The module evaluation summaries had the highest scores of our postgraduate modules, suggesting overwhelming satisfaction with the module. The high marks achieved on this module corroborate the claim that active learning does indeed promote student interest and student learning.

In addition to the departmental comments, a number of students also chose to add qualitative statements on the course. These are listed below, with those that relate most clearly to the hypothesis in italics.

Student Comments

Excellent Course well constructed and carried out.

I preferred face to face simulations but enjoyed the mixture.

I am just sorry the course had to end.

This has been my favorite module of my program.

I liked the web simulations, as I found the face to face events a little hard.

The inclusion of simulations was good as this allowed application of the reading and course material.

The simulations were very enjoyable and interactive.

The practical (simulation) sessions, really gave us an idea of the experiences international negotiators and mediations personally go through.

The simulations were helpful and interesting, encouraging participation from everybody.

I most enjoyed the simulations

Lovely Class

I really enjoyed the student participation in this class, where we could reflect on the things we had learnt in the lecture.

Negotiations were great tool to physically show what was being taught

The aspect of my whole masters program I enjoyed most was the simulations in this module

From a number of these statements it is clear that lots of students enjoyed the simulations, and further found them a valuable opportunity to apply the knowledge they had acquired throughout the course.

In addition to standard departmental survey, we also produced our own questionnaire that was more focused upon our research questions. The first series of questions on this survey related to the first hypothesis, and included the following statements that the students were asked to rank from 1 to 5 (1 = strongly disagree, 2 = disagree, 3= no sure, 4= agree, 5= strongly agree), “Simulations help me to understand theoretical concepts”; “Practically apply parts of the course has helped my comprehension in general”; The results are depicted below.

Figure 1 “Simulations help me to understand theoretical concepts”;

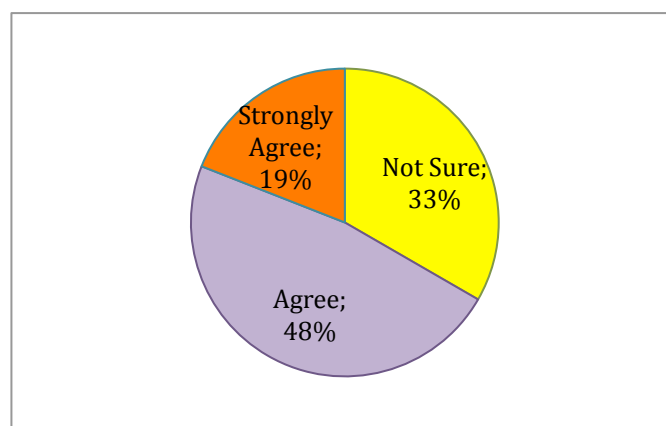
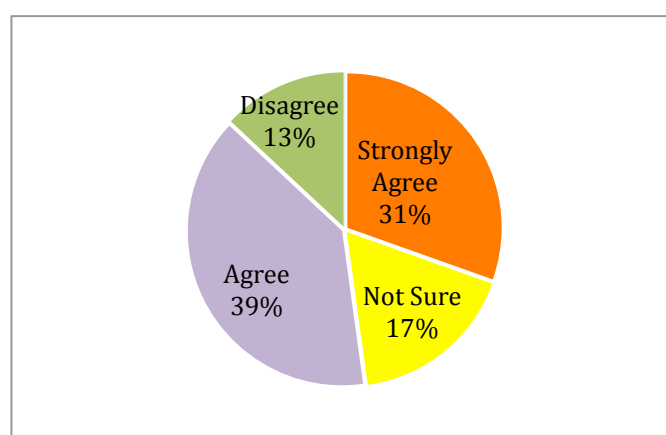


Figure 2 “Practically apply parts of the course has helped my comprehension in general”

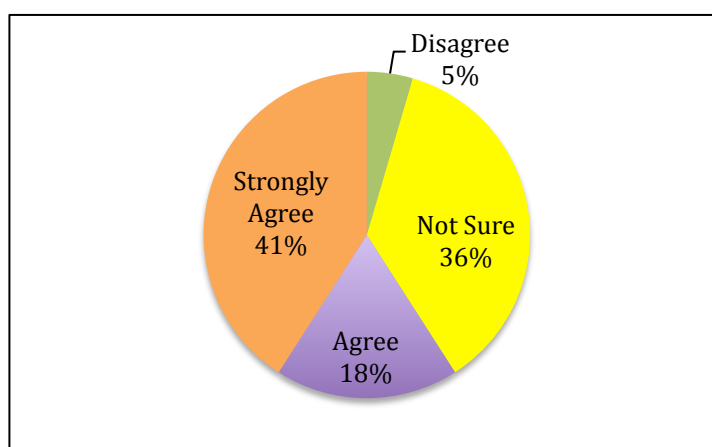


The results seem to complement the analysis of student grades very well. As both figure one and two clearly portray, over eighty per cent of students believed that the use of simulations helped in their comprehension of theoretical constructs. While

seventy per cent of students believed that the simulations helped their comprehension in general (figure 2). One further question also asked students if simulations were of any learning use to them, not a single student suggested that the simulations had been of no use to their learning development.

Progressing to the second hypothesis we next sought to test the impact of simulations upon student preparation for classes. To assess student opinions in this area we asked for their opinions on the statement “I prepare more thoroughly for simulations than normal seminars”, and again asked the students to rate this comment out of five.

Figure 3- “I prepare more thoroughly for simulations than normal seminars”



Over sixty per cent of respondents agreed or strongly agreed with this comment. In fact only one student disagreed. This is particularly striking if we consider that in effect students were acknowledging a lack of preparation for seminars, being as the amount of preparation required for most simulations was often no greater than would be expected for a normal seminar session.

Having looked into the preparatory part of hypothesis two, we next sought to locate the opinions of students regarding participation. Having observed the students in each of the classes we were confident regarding the positive impact of simulations on student participation, having witnessed the often thrilling and excited atmosphere that swept the classroom during these events. To see if the students agreed with this assessment we asked them to rate two statements, “I contribute more to simulations than normal seminars” and “Participation from fellow students is higher during simulations than normal seminars”. The results are presented below.

Figure 4 - “I contribute more to simulations than normal seminars”

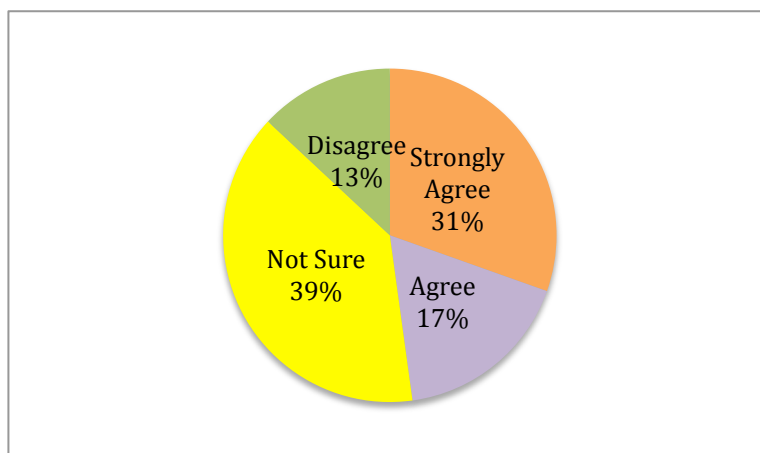
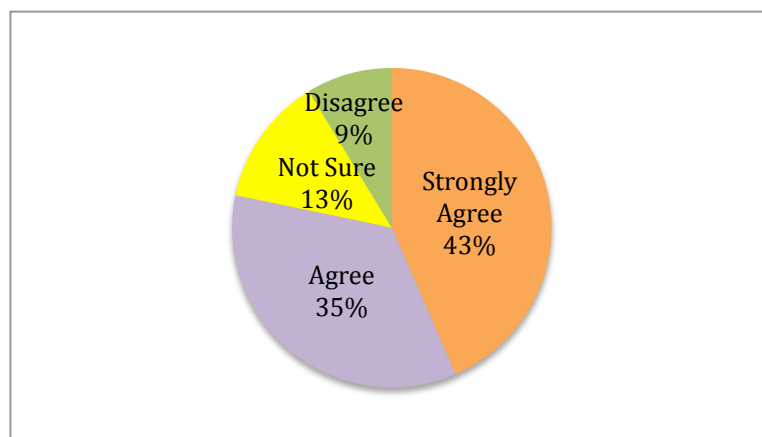


Figure 5 - “Participation from fellow students is higher during simulations”



The results from the first statement appear rather indeterminate. While forty eight per cent of students suggested that they contributed more within simulations than normal seminars, thirty nine per cent of students were not sure of their answer, while a further thirteen per cent disagreed. However when constructing the questionnaire we anticipated this potential problem, much was the case with the self-assessment of class preparation, we were in effect asking students to give an answer that they might perceive to be as a negative representation of themselves. We thus included the second statement, asking them to assess the participation of their peers. In this sense the results appeared far more in line with our expectations as seventy eight per cent of students either agreed or strongly agreed that other students participated more within simulations than normal classes.

Taken together the results thus seem largely supportive of both hypothesis one and two. The analysis of student grades suggested those students that were taught using simulations performed notably better than they did on other modules, and other students who had taken the module the previous year. Moreover the questionnaires suggested that the vast majority of students attributed their increased theoretical appreciation to the practical application within simulations.

In terms of the second hypothesis student feedback was also highly favorable. Student reported very high levels of effort within the module in general, in particular on those weeks in which simulations occurred. Notably the majority professed to invest more time in the preparation for simulations than normal classes, and suggested that others participated more in this more active setting.

Yet despite the generally favorable results a few points of caution still deserve consideration. Firstly the sample size was too small to have any great confidence in the validity of the results. Using a module that only included 35 students was good enough to provide a preliminary suggestion that the results are part of a more general pattern, but further analysis will be required before we can be truly confident as to the external validity of these results. Moreover this small sample limited the extent to which significance testing could be undertaken, preventing us from occurring if the difference in means did not simply occur by chance.

Secondly while the method we adopted attempted to control for rival explanations and reduce the issue of selection bias, a variety of factors remain missing from our analysis. For example the quality of teaching and generosity of the markers could all have contributed to the findings and remain difficult to control. The only way around most of these challenges would be to randomly split a class in half and provide the treatment of simulations to only one group. The differences between these groups might then represent a more valid test of simulations. However given the positive impact we have witnessed this method producing in the classroom, we are a little reluctant to adopt this approach. However this remains an avenue of future research.

Finally the use of questionnaires to measure participation and preparation of students is also open to random error. For the subjective nature of the method means that each of the respondents may perceive the questions differently, causing error in the results.

Thus an improved method of evaluation might improve the confidence we can have in our findings.

5. Conclusions

This paper has reported the findings of the first iteration of an innovative teaching program. Drawing on existing literature that has more than ever begun to embrace the benefits of a more interactive style of teaching, we devised a project that allowed students to practically apply and engage with the negotiation literature. The results both in terms of student grades and satisfaction suggest that this project has already had extremely positive effects upon student learning and development at the University of Kent. By incorporating a variety of different simulations (in particular the adoption of web based methods), we constructed a program that appealed to different kinds of students with a variety of strengths.

There can be little doubt that this more active method of teaching is more suited to certain forms of study. In this sense our negotiation course was perfectly suited to this task. However we do believe that while other programs may not want to shape the entire program around the method in the manner we attempted, in some shape or form the use of simulations could improve the learning experience on most courses. In our own work we have already begun to adopt this method of teaching in less obvious module options, to see if this assumption is supported by our findings.

Further having discussed the results of this project with colleagues at other institutions, we now hope to expand our simulations to include a greater inter-university dynamic. This larger sample should produce greater confidence in the results and should provide greater support for this innovative method of teaching. Such a finding can only help to increase the use of this method, an outcome likely to be favorable to both students and staff alike.

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