Using media-activated learning groups to support peer-teaching of higher education students

Chris Pickford

Regent's University London, Inner Circle, Regent's Park, London, NW1 4NS, UK.
pickfordc@regents.ac.uk

Abstract: Despite the increase in active learning and cooperative learning based pedagogies in higher education, there is no clear evidence of increased learning effort by our students during group assessments. This research suggests that peer teaching represents one approach to promoting effective learning in co-operative learning tasks by the use of media-activated learning groups. This paper reviews a peer teaching case study in higher education and offers empirical evidence to support the idea that peer teaching may help increase peer tutees' learning effort, the motivation coming in part from the social interaction of peer teaching and in part from the video report format.

Keywords: Media; Learning; Peer; Teaching; Student.

Biography: Chris Pickford is an academic in the Faculty of Business & Management at Regent's University London and teaches on international business and management modules and supervises dissertations at undergraduate and postgraduate levels.

Contents:

Word count: 4,503.

1. Introduction and rationale

Peer teaching is a process by which students learn from other students who are more knowledgeable about the subject material. Colvin (2007) states that peer teaching involves persons of the same social group or social standing educating one another when one peer has more expertise or knowledge than the others. Goldschmid et al, (1976) identify five types of peer teaching models including the student learning group (SLG) model, which represents self-guided groups that are used to encourage peer learning and assist those at a different level of ability. The media-activated learning group model is similar to the SLG model but the students work through the learning process with media tools or materials to structure the process. In both cases, the tutor organises the activity in which learners help each other and learn by teaching (Goodlad et al., 1989). The collaboration available through Web 2.0 technology and video media reinforces the assumption that one of the best ways to learn something is to teach it to others. This social learning claim is tested here with the media selection of a Video report.

2. Literature Review

This review of literature begins with a brief overview of peer teaching as a cooperative learning methodology. We provide theory contexts for cooperative learning using the social, constructivist and andragogy principles. Finally, we consider how constructivist learning supports the use of media-activated learning in small task groups.

Slotnick et al., (1981) examined cooperative learning of large psychology classes at the undergraduate level and their study found that peer influence and peer interaction play a vital role in cooperative learning. Peer teaching creates a relationship between learners where peers have the ability to be highly influential. A closeness between peers exists that cannot occur between student and teacher (Goldschmid & Goldschmid, 1976). As a result, working with peers often produces a sense of belonging. This sense of belonging creates intrinsic motivation, which is one of the best stimuli to learning (Bruner, 1960). Additionally, peer teaching can improve students' levels of active involvement in the teaching and learning process (Whitman, 1988). This involvement and motivation are key to facilitating increased effort in the learning experience. In working together, students were required to discuss, explain, interpret, demonstrate, relate, generalise, compare, and justify their understandings" (Kassner, 2002, p.18). Therefore, peer teaching clearly encourages students to become involved with subject matter at all stages of Bloom's taxonomy of learning.

According to Stage et al,. (1994) approaches to learning that promote social constructivism, or learning within a social context, and that feature active group constructions of knowledge provide an ideal environment for some learners. They cite that; "social learning experiences, such as peer teaching and group projects, particularly those that promote group construction of knowledge, allow a student to observe other students' models of successful learning, and encourage him or her to emulate them (social constructivism, self-efficacy, learning styles)". In addition, they consider the use of media-activated learning tools such as the internet and video provide "the means through which individuals engage and manipulate both resources and their own ideas". In conclusion, the use of media-activated tools can help to represent knowledge and facilitate communication so that students can learn by interaction with each other.

Cooperative learning involves applying learning in new experiential contexts. In such cases, the teacher's role is to primarily design opportunities for the students to explore ideas through peer discussions and even to allow them to articulate their own roles in the learning process. Active or self-directed learning is highly motivating for students by allowing them to own part of it. Knowles' (1975) theory of andragogy, considers that adults are self-directed and therefore teaching needs to focus more on the process and less on the content being taught. He argues that there is convincing evidence that people who take the initiative in learning (proactive learners) learn more things, and learn better, than do people who sit at the feet of teachers passively waiting to be taught (reactive learners). Many of the new developments in education put a heavy responsibility on the learners to take a good deal of initiative in their own learning and strategies such as role playing, case studies, simulations and self-evaluation tend to be most effective. However, self-direction strategies can be risky particularly if students haven't learned the skills of self-directed inquiry when they will

experience, "anxiety, frustration, and often failure, and so will their teachers" (Knowles 1975, pp.15). Malcolm Knowles believed that informal learning is the key to practising and refining things learned through a 'club experience' with adult learners. "Attitudes and opinions are formed primarily in the study groups, work groups, and play groups with which adults affiliate voluntarily" (Knowles 1975, pp.9).

Empowering learners to construct knowledge through active learning can be achieved through the use of the Internet or video as a learning tool. Technology is merely a tool to enable students to construct knowledge. Video is an effective and proven technological tool that can be used to support constructivist learning. Rather than merely show film and videos to students in a passive manner, constructivist learning employs video as an active tool that requires students to produce information, as opposed to consuming information. According to Johannson (1999) learners must be active, constructive, intentional, and cooperative to produce video. Therefore, peer teaching as cooperative learning can be enhanced through media-activated techniques such as Video.

3. Methodology

This paper uses a case study designed to enhance student learning aimed at Level 5 post-graduate international students from Ealing, Hammersmith and West London College (EHWLC). International students in their second year of study following their work-based learning period can be typified by low effort and motivation particularly when academic progression is not an objective. The case study served to answer the 2 following research questions:

> 1) To investigate the effects of peer teaching on students' effort in task-centred peer groups.
> 2) To determine whether peer teaching positively affected students' attitude toward cooperative learning.

The peer teaching experiment replaces three conventional teaching sessions (of three hours duration) during March/April 2013. The opportunity was to improve attainment and engagement with the material by using the combined experiences of the cohort. The learning outcome briefed to the task-centred peer groups was to provide a peer teaching session using their hotel work-based experiences to highlight how they would communicate the impact on revenue management. A two-phase (researching - peer teaching) pedagogy is reported to support co-operative learning using a Video Report based on structured teamwork. The steps are outlined and summarised in Appendix 1.

3.1 Team formation

The composition, structure and management of groups has an important impact the development of a learning community (Chapman, 2005). Group size and abilities will normally be determined by the demands of the task. The tutor nominated one 'expert' with 'front-office' experience in each of the 4 task-centred peer groups and nominated based on class discussion.

3.2 Questionnaire design and data collection

Three questionnaires were used in the study. Responses from students indicate the degree to which each item is true for them (on a 7-point part-labeled Likert scale): strongly agree (7 points), agree (6 points), slightly agree (5 points) neutral (4 points), slightly disagree (3 points), disagree (2 points) strongly disagree (1 point). Likert scales have the advantage that they do not expect a simple yes / no answer from the respondent, but rather allow for degrees of opinion, and even no opinion at all. It is recommended that a wide a scale as possible is most accurate in capturing attitudes and has the benefit of being collapsed into condensed categories for analysis.
Prior to completing the questionnaires, students were informed about the purposes of the research and advised that their participation was voluntary and anonymous. The students completed the questionnaire at three points:
- Questionnaire 1: at the end of the research and video production session to review involvement and learning.
- Questionnaire 2 to peer-evaluate the peer teaching session and review learning.
- Questionnaire 3 to assess student's own response to the new learning approach.
In addition, individual interviews were conducted with a limited number of students at the end of Week 3 session using themed questions. Data obtained from the questionnaire was analysed using

percentages and is presented in tables and figures. Open-ended responses to these questions were inductively coded into consensus themes.

4. Results and evaluation

The three questionnaires are shown at Appendix 2:
>   (1) Self-evaluation questionnaire: research and production phase (n=17).
>
>   (2) A peer-assessment survey: peer teaching performance (n=19).
>
>   (3) Self-evaluation questionnaire: attitudes to peer teaching session (n=18).

In addition, semi-structured interviews were undertaken with a smaller number of students (n = 5) following the end of the week 3 session.

4.1 Self-evaluation questionnaire

This was used to measure attitudes towards enjoyment, involvement and learning points from the research and video production phase. This survey included four 7-point Likert items relating to four questions. A percentage response of students for the four questions is shown in Table 1.

Questions	Percent %		
	Yes	No	Undecided
I enjoyed working as a group on this task	100	0	0
I contributed well to the media-activated peer teaching content	94	0	6
I enjoyed using new learning methods	88	0	12
I expect the video will be viewed as an interesting resource by my peers	94	0	6

Table 1: Perceptions of students (n=17).

The feedback was highly positive to all questions from this research and production phase. Responses 5-7 are categorised a 'yes' response. Over 50% of the cohort responded most positively (strongly agree) to the two enjoyment questions relating to group working and of using new learning methods. 94% of the students believed they had contributed very positively to the development of the peer teaching video, which is a strong indication of effort.

Despite prompting the question with an open response in order to make a connection with the learning outcome only 59% answered this directly. The 41% remainder generally made comments relating to the process of the video production or role-play activities.

4.2 Peer assessment survey

Table 2 shows the rating of peer teaching sessions and feedback against learning outcomes. It is based on week 2 students' peer assessment survey for each of the four peer teaching sessions:

Peer teaching topic	Video format	Percent %		
		Very good (1)	Good (2)	Weak (3)
1. Front office	Role play	37	58	5
2. F&B upselling	Role play	37	58	5
3. Housekeeping communications	Group discussion	32	58	10
4. Guest recognition	Animation (avatar)	58	42	0

Table 2: Student perception (n=19).

The results of the peer assessment of the peer teaching performance highlighted a high degree of satisfaction with all sessions scoring on average between 1 (very good) and 2 (good) overall. An example of Facebook comments are shown at Appendix 3 from participating students highlighted the excitement from collaboration around the production of the video.

A suggested framework of four typical hospitality marketing strategies was boarded in the Week 1 session and is cross-referenced from the range of learning responses received from the questionnaire in Table 3.

Marketing strategy impacting on revenue management	Student feedback: range of topic-based learning points from 4 peer teaching sessions
1. Customer service	- Customer satisfaction - Service repair - Customer recognition - Customer communications - Product knowledge
2. Selling strategies	- Discounting - Use of promotional vouchers - Upselling
3. Profit improvement	- Customer retention - Yield management
4. Customer segmentation	- Customer relationship management - VIP guests

Table 3: Hospitality strategies and learning points.

The conclusion is an impressive and comprehensive recall of learning points at both individual and cohort level. This demonstrates learning has taken place using peer teaching. This is especially relevant as the findings from the research and production phase were not conclusive. The range of responses has been interpreted from the native responses given by the students.

4.3 Self-evaluation questionnaire

This outlines the attitudes to the peer teaching sessions relative to other methods and potential improvements to the process. This survey included four 7-point Likert items relating to four questions. A percentage response of students for the four questions is shown in Table 4.

Questions	Percent %		
	Yes	No	Undecided
The media-activated peer teaching helped me learn about the subject	100	0	0
Learning from peers is more effective and interesting than a normal lesson	100	0	0
Would like to learn from peers again on a different subject	94	0	6
Prefer to learn only from the teacher	55	28	17

Table 4: Perceptions of students (n=18).

The feedback was highly positive to the first three questions. There is an interesting correlation between the second and fourth questions; Question number 2 referred to a preference for peer learning yet 45% of students do not positively support learning from peers over the teacher. This suggests that the peer teaching can be used selectively or with a strong teaching input from the teacher. A single multiple-choice choice question requested students to identify which of the weekly sessions was most directional in contributing to the learning of the topic. In response, 89% of the students felt that all three weekly sessions were equally important in terms of developing learning. 11% had a preference for the peer teaching using the video presentation over previous teaching sessions.

4.4 Semi-structured student interviews

Interviews of approximately 5 minutes were conducted to further examine issues reported in the questionnaire. Four volunteers from the task-centred peer teams were sought to participate in individual interviews. Two key interview areas largely focused on issues reported in the questionnaire is summarised in Table 5.

Interview question topic	Summary of responses	Example quotes
Increased involvement and effort relating to the learning	The sense of responsibility to peers and higher level of autonomy that led them to work harder and have to be able to justify their decisions.	"It provides more questions around the subject because it is being explored from different teams". "When we involve our self in doing work, it's better than just listening or reading. Makes us more involved in the class activity". "Involvement and fun doing work and 'gives energy' to students".
Added value of the group in terms of learning and enhanced social cohesion	Different experience in the teams helped express the knowledge in more relevant language.	"This is really helpful for us because discussions give us solutions and answers for the future in our job roles". "I would say that both ways are quite good – however sometimes I need some ideas and knowledge from the teacher". "More scripting and pre-planning of thoughts in the role play and perhaps research sources evidenced".

Table 5: Selected findings from student interviews.

5. Findings and conclusions

This case study reported changes of students' opinions of group-based preparation and delivery of content. The data was collected around two research questions: First, to investigate the effects of peer teaching on students' effort in task-centred peer groups and, second, to determine whether peer teaching positively affected students' attitude toward cooperative learning.

5.1 Effects of peer teaching on students' effort in task-centred peer groups

Whilst teaching is typically judged in terms of the effort put in by the teacher, learning tends to reflect the effort being put in by the student. Students working in groups to solve problems frequently show a lack of effort and ambition, the lullaby effect (Bigge et al., 1999). The task was designed so that each group shared the goal of delivering a video presentation. Further, since each member researched a separate component of the content areas required for the task, there was also a reasonable level of interdependence. The results show strong individual participation in both the research and production stage and in the classroom participation. How well students feel about how they performed can be as important as evaluating the academic outcome of their group work. Their accompanying comments were based on the even contributions of members to the team effort.

5.2 Impact of peer teaching on students' attitude toward cooperative learning

In the peer teaching, students had to articulate their understanding to their tutees and had the luxury of immediate feedback from their peers, which is highly motivating. The results show a very high level of appreciation for both the social-emotional and academic benefits of working closely with others students. There was unanimous support for the notion of 'learning from peers is more effective and

interesting than a normal lesson'. This was further evidenced through the different experience in the teams that helped express the knowledge in more relevant language. The peer teaching provided students with a more complete understanding with more questions around the subject being explored from different teams. There is support for cooperative learning improving the personal competencies of self-reflection and accurate self-assessment in the deeper thinking and reflection evidenced.

6. Recommendations

There are three recommendations resulting from this work:

1. The key to effective cooperative learning is to create a supportive environment that encourages students to take risks. Whilst formal assessment was not the objective of this study, it is possible with care to consider peer teaching sessions as an innovative method particularly in the assessment of work-related learning. Whilst the student's learning effort has been accurately self-assessed, formalised assessment of peer teaching activities would require more structured research activity. Evidence of separate reference lists or research sources to demonstrate inter-dependence and achievement of the learning outcomes.

2. Peer evaluation to peer teaching requires the use of a structured research approach in the research and peer teaching phases. The level of reflection and interactivity achieved through the questionnaires and interviews during the sessions should not be replaced by reliance on social networks outside of the sessions. The use of Facebook in this study supported the collaboration aims of the cooperative learning but evidenced that reflection is limited to 'tags' or 'after the event.

3. An innovative way to implement peer teaching is through a media-activated learning approach using a video presentation since it creates interest and enthusiasm among the students and provides opportunities for hands-on learning experiences. The use of the College's Molnet facility required support from technicians to help facilitate the production activity with only one peer group able to record at any one time. Increasingly, the use of mobile tablets for visual capture of classroom experiences provides exciting new possibilities to extend this study. In addition, a more autonomous production facility could reduce the session time required for a peer teaching session to just two sessions.

7. References

Bigge, M. S. and Shermis, S. (1999) Learning Theories for Teachers, 6th Ed., Longman, New York, London, p285.

Bruner, J. (1960). The process of education, Cambridge: Harvard University Press.

Byers, B. and Wilkins, H. (2005) The Midwich Cuckoos revisited: promoting learning through peer group work, *Working Paper W3*, The Science Learning and Teaching Conference 2005.

Carr, W. & Kemmis, S. (1986) Becoming Critical: education, knowledge and action research. Lewes, Falmer.

Chapman, C., Ramondt, L. and Smiley, G. (2005) Strong Community, Deep Learning: Exploring the Link. *Innovations in Education and Teaching International*, Issue 42, pp.217–230.

Coe, E. M. McDougall, A. O. and McKeown, N. B. (1999) Is Peer Assisted Learning of benefit to undergraduate chemists?, *University Chemistry Education*, No 3, pp.72-75.

Collier, K. G. (1980) Peer-Group Learning in Higher Education: The Development of Higher Order Skills, *Studies in Higher Education*, Vol. 5, No. 1, pp. 55-62

Collier, K. G. and Clarke R. (1986) Syndicate Methods: Two Styles Compared. *Higher Education*, Vol. 15, No. 6, pp.609-618.

Clark, R. E. (1983) Reconsidering Research on Learning from Media, *Review of Educational Research*, Vol. 53, No. 4, pp.445-459.

Gillies, R.M. and Ashman, A.F. (2003) Co-operative learning: The Social and Intellectual Outcomes of Learning in Groups. London, UK: Routledge Falmer.

Goldschmid, B. and Goldschmid, M.L. (1976) Peer teaching in higher education: a review. *Higher Education*, No.5: pp.9-33.

Goodlad, S. and B. Hirst. (1989) Peer Tutoring: A Guide to Learning by Teaching, London: Kogan Page Limited, pp184.

Haralambos, M. & Holborne, M. (1995) Sociology: Themes and Perspectives, London: Collins Educational.

Institute for Learning (2008): http://www.ifl.ac.uk/membership/professional-standards/code-of-professional-practice (accessed on 1st June 2012).

Jonassen, D. H., Peck, K. L., Wilson, B. G. (1999) Learning with technology: A constructivist perspective, Special Education (1999)Vol. 16, Issue 1, Prentice Hall.

Kassner, K. (2002) Cooperative learning revisited: A way to address the standards. *Music Educators Journal*, No. 88, pp.17-22. Cited in: http://etd.lsu.edu/docs/available/etd-08152008-203703/unrestricted/Baker_diss.pdf (accessed 1st June 2012).

Knowles, M. S. (1975) Self-Directed Learning. A guide for learners and teachers, Englewood Cliffs: Prentice Hall/Cambridge.

Knowles, M. S. (1950) Informal Adult Education, Chicago: Association Press, pp. 9-10.

Newton, L. H. (1983) Professionalisation: 'The Intractable Plurality of Values', in Profits and Professions, ed. Wade L. & Robison et al. (Clifton, NJ: Humana Press.

Slotnick, R. S., Jeger, A. M., & Schure, M. (1981, August). Peer support networks in a large introductory psychology class. Paper presented at the Annual Convention of the American Psychological Association, Los Angeles. Cited in: http://etd.lsu.edu/docs/available/etd-08152008-203703/unrestricted/Baker_diss.pdf (accessed 1st June 2012).

Stage, F., Muller, P., Kinzie, J., Simmons, A. (1998) Creating learning centered classrooms. What does learning theory have to say? Washington, DC: Graduate School of Education and Human Development, ERIC Clearinghouse on Higher Education.

Whitman, N. A. (1988). Peer teaching: To teach is to learn twice. ASHE-ERIC *Higher Education Report*, No.4, Washington, D. C.: Association for the Study of Higher Education.

Wilson, L. (2009) Practical Teaching: A Guide to PTLLS & DTLLS. Andover: Cengage Learning.

Appendices

Appendix 1: The outline of the peer teaching process using a two-phase (researching - peer teaching) pedagogy.

Phase	Tasks:	Schedule
Research	Subject tutor to identify a topic in the syllabus that is suitable to engage all learners.	Week 1
	Subject tutor divide the classes into task-centred peer groups based on expertise and direct involvement with Front Desk operations.	
	Each group selects one topic to prepare a video lesson (accompanied by an activity sheet).	
	Subject tutor facilitates task-centred peer group and reviews suggestions for peer teaching to meet learning outcomes.	
	Subject tutor works with the groups to ensure that some basic skills are learnt: Communication and articulation skills, working as a group, hands-on skills with video operation and editing and practicing their teaching in advance of a video filming.	Week 2
Peer teaching	Subject tutor provides feedback forms to evaluate and reflect on the research and production of a Video.	
	Videos are uploaded to Facebook for peer review.	
	Subject tutor sets up the video playback in the classroom and distributes feedback forms to allow peer-to-peer assessment.	Week 3
	Tutor facilitates groups to structure peer teaching by introducing their topic and identify learning points followed by a class discussion (soft) chaired by the tutor.	
	Subject tutor distributes feedback form to allow the students to evaluate both the stages of the process and the attitudes towards peer teaching.	

Appendix 2: The three questionnaires.

(1) Self-evaluation questionnaire: research and production phase (n=17).

<u>Peer-teaching activity - evaluation and reflection of research and production of a Youtube video</u>

Name & Date:

1. **What area of the presentation topics were you involved in?** (please underline one)
   - Front office
   - F&B upselling
   - Housekeeping communications
   - Guest recognition

2. **Please tick one box for each of the four points (a-d) below:**

		Strongly disagree			Neither		Strongly agree	
	Question	1	2	3	4	5	6	7
a	Overall I enjoyed working as a group on this task							
b	I feel I contributed well to the final video content							
c	I enjoyed using new learning methods							

d	I expect the video will be seen by other PG students as an interesting learning resource							

3. **What have you learned from this research phase about your topic?**
   Identify two points relating to your topic <u>and its impact on revenues</u> that you have learned and would benefit others.

First thing:

Second thing:

(2) A peer-assessment survey: peer teaching performance (n=19).

Peer-teaching activity - evaluation and reflection of discussion of a Youtube video/animation

Name & Date:

1. **Please tick one box for each of the four points (a-d) below:**

		Strongly disagree			Neither		Strongly agree	
	Question	**1**	**2**	**3**	**4**	**5**	**6**	**7**
A	The video / animation helped me learn about the subject							
B	I feel that learning from the others in my class is a more effective and interesting way than traditional learning							
C	I would like the opportunity to learn from others in my class again on a different subject							
D	I prefer to receive my knowledge of the subject only from the teacher							

2. **What aspect of the video presentation helped <u>you learn the most</u>?** (please underline one)
   o   The research and preparation of the script (in groups)

   o   The actual video production and role-play or discussion

   o   The replay of the video in class with the instruction from the student

   o   All of the three stages were equally important

3. **How could this learning activity be improved for you in the future?**

(3) Self-evaluation questionnaire: attitudes to peer teaching session (n=18).

Peer-teaching activity - evaluation and reflection of discussion of a Youtube video/animation

Name & Date:

Please complete a review for the video lessons you have not been involved in below:

Video / animation lesson	How do you rate this video / animation lesson and why? please grade: (1 = great, 2 = good, 3 = weak) and the reason for your grade	How do you feel the lesson helped you to learn about revenue management? (please comment)
1 Front office staff		
2 F&B Upselling		
3. Housekeeping communications		
4. Guest recognition		
5. Food preparation		

Appendix 3: Facebook peer review of peer teaching

The Facebook page has a group page for the H20 group of international with 17 participating members and therefore not all of the groups were represented. The peer teaching videos were immediately uploaded and examples of feedback on Facebook below: