

Seven Problems of Online Group Learning (and Their Solutions)

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ABSTRACT

The benefits of online collaborative learning, sometimes referred to as CSCL (computer-supported collaborative learning) are compelling, but many instructors are loath to experiment with non-conventional methods of teaching and learning because of the perceived problems. This paper reviews the existing literature to present the seven most commonly reported such problems of online group learning, as identified by both researchers and practitioners, and offers practical solutions to each, in the hope that educators may be encouraged to “take the risk”.

Keywords

Online collaborative learning, CSCL, Group learning, Group work, Free riders

Introduction

The importance and relevance of social interaction to an effective learning process has been stressed by many theorists, from Vygotsky (1978), through advocates of situated learning such as Lave and Wenger (1991), and many other recent researchers and practitioners. Indeed, the academic, social, and psychological benefits of group learning in a face-to-face environment are well documented (see, for example, Johnson & Johnson, 1977, 1984; Slavin, 1987; Tinzmann et al, 1990; Bonwell & Eison, 1991; Felder & Brent, 1994; Panitz & Panitz, 1998; Burdett, 2003; Graham and Misanchuk, 2004; Roberts, 2004, 2005).

Online group learning, sometimes referred to as computer-supported collaborative learning (CSCL), if implemented appropriately, can provide an ideal environment in which interaction among students plays a central role in the learning process (see, for example, Koschmann, 1999, 2001; Lipponen, 2002; Lipponen et al, 2002). Why then is online group learning not more widely practiced, particularly within higher education? There are a variety of possible reasons that could be supported with some justification. Certainly one reason that would be prominent in any list would be educators’ fears of veering away from the well established “sage on the stage” mentality (characterised by the traditional lecture / seminar / tutorial format, with notes and other resources provided on the Web) to the more increasingly common “guide on the side” mentality (characterised by various forms of group and peer learning). These fears can, however, be readily allayed by a prior knowledge of the problems likely to be encountered, and appropriate solutions that can be applied.

The Seven Problems

Amongst the problems that are thought to be inherent to this method of teaching, the seven most commonly found in the literature are the following:

- Problem #1: student antipathy towards group work
- Problem #2: the selection of the groups
- Problem #3: a lack of essential group-work skills
- Problem #4: the free-rider
- Problem #5: possible inequalities of student abilities
- Problem #6: the withdrawal of group members, and
- Problem #7: the assessment of individuals within the groups.

Many of these problems of online group learning are inter-related. For example, student antipathy (#1) may lead to free-riders within groups (#4), and even the withdrawal of some group members (#6), and this in turn may cause problems for the assessment of individuals within the groups (#7). Indeed, it will be seen that problem #7 in particular is central. Nevertheless, it is perhaps advantageous to examine each of these problems independently,

making reference to the others where appropriate. All of the listed problems are relatively easy to overcome, and the possible solutions undemanding when measured in terms of time and resources.

Problem #1: student antipathy towards group work

Some students do not care for the idea of group work and can be apathetic, or even on occasions actively hostile to the whole idea. Why should this be so? Given that it is relatively commonplace for students to voluntarily congregate in groups to discuss assignment problems and solutions outside of class times, it would seem especially surprising.

Commonly expressed student views against involvement in group work include:

- I study best on my own
- I have no need to work in a group
- I can't spare the time to meet and communicate with others
- Others in the group are less capable

Although some students may be genuinely concerned, experience shows that if their initial antipathy can be overcome, many will come to appreciate the advantages that a group learning environment can provide. So how can the antipathy best be overcome?

Solution #1.1: Tell the students the benefits!

Among the potential benefits which educators should stress to students are the social, psychological, and learning benefits, the much greater chance of being received appreciatively by potential employers, and the fact that much of their future careers will almost certainly involve working in groups with a diverse range of people who will have a wide variety of skills and abilities. Experience of working with others of differing backgrounds and capabilities is therefore likely to be highly beneficial.

The Teaching & Assessment Network (1999: p5) members highlighted the point that

'... departments needed to communicate the purpose of group activity so that students understand the associated benefits (and limitations). Such explicitness was seen as an important stage in helping students better understand and develop their group work skills.'

A minimal list of generic skills honed by the use of group work would include the abilities to cooperate with others; to communicate effectively; to lead, and work effectively in, teams; and to organise, delegate, and negotiate. Students should also be made aware that any number of surveys point to employers regarding generic skills (perhaps most particularly the ability to work effectively in teams) as being of prime importance when selecting graduates. Indeed, in many areas, such skills are seen as being equally as important as content knowledge.

Levin (2002a: p5) indicated that, when it came time for them to partake in real world employment, students involved in group learning would have developed the skills of...

- developing rapport with others
- negotiating a framework for working with others
- generating and sustaining motivation and commitment to working together
- standing back from the hurly-burly of teamwork and
- making sense of what is going on in one's team
- coping with stressful situations that arise
- evaluating the working of one's team
- recognising and making the most of individuals' dispositions to prefer particular team roles
- building up one's teamwork expertise.

But the development of generic skills is not the only benefit of group learning. Research shows that many students, particularly including weaker students, and some minority groups, often learn more effectively in such an

environment. And, in an online setting, the use of group work can greatly reduce the feeling of isolation experienced by many students, even the most successful ones.

Most students are naturally ignorant of the benefits of group learning. They may find out for themselves during the learning process, but initially at least, they need to be told!

Solution #1.2: Make the assessment criteria explicit.

Students are naturally wary of any system which might judge them based on the merits (or shortcomings) of others. It is not sufficient to have a fair assessment system in place – it must, in addition, be made absolutely explicit, right from the outset of the course, so that students are fully aware of the basis upon which their individual mark will be based. In an online course, it is usually convenient to have this information available on a prominent web page, though it could also be communicated via discussion lists, or by individual email.

The exact nature of how students can be assessed in an online group setting is dealt with in detail in problem #7. The important point is that when appropriate assessment criteria have been decided, they should be justified, and both the criteria themselves and their justification made available to all students. Once students are assured that group work is beneficial, and that they will be judged according to their individual efforts, much of the initial antipathy will dissipate.

Problem #2: the selection of the groups

Selection of groups tends to be easier in an online environment. Two problems common in the face-to-face environment are either non-existent, or greatly reduced: the tendency for students to want to be in a group with friends (and to feel aggrieved if they are not), and the difficulty of arranging suitable times when all group members can meet outside of scheduled sessions.

How large should each group be? There is no standard answer here that fits all circumstances. Johnson and Johnson (1987) and Kagan (1998) suggest that teams of four work well in a face-to-face setting, while Bean (1996, p160) suggests groups of five or six work best. However, arguments based on group dynamics are less applicable in an asynchronous online environment, where both small and large groups can work well, depending upon the context, and the size and complexity of the group task.

How should the membership of each group be determined? There are several solutions here, but letting students choose their own groups is not usually one of them. The method presents too many complications in the online environment.

Solution #2.1: Select at random.

Since the students are online, and can, presumably, communicate via email, problems of geographic location shrink into unimportance, and, if communication is asynchronous, so too does the problem of arranging meeting times. So group membership based on a random selection is likely to be prone to far fewer difficulties than would be the case in a face-to-face environment. And a pseudo-random selection (free from even unconscious instructor influence), based on a digit in the student number, or the month of birth, or some other criteria, is easy to implement.

The down side to such a solution is obvious: as Burdett (2003: p178) comments:

'...it is likely that groups will be formed with little consideration given to personality, life experience, ability or aptitude, so that a successful mixture of individuals is more likely to be achieved by happy accident rather than design.'

In many cases, however, a random selection may suffice, and may indeed prove to be as effective as some more contrived method.

Solution 2.2: Deliberately select heterogeneous groups.

Left to select on their own, students will naturally choose to be with friends, who, more likely than not, will be from similar backgrounds. It can be very beneficial for the instructor choosing groups to attempt to do exactly the opposite – that is, to mix students from a range of ages, genders, and cultural backgrounds. This can improve a range of generic skills, including the ability to communicate effectively, to understand others' points of view, and to be understanding of other cultures and backgrounds.

There is some evidence that heterogeneous groups can be advantageous, because of the different perspectives brought to the group (Kagan, 1997; Johnson & Johnson, 1989). Thus, where possible, it would seem advisable to consider each student's previous academic background and work experience as important factors. In fact, the authors' own experiences would suggest that it is often considerably easier to form diverse groups when the majority of students are studying online, rather than face-to-face.

Problem #3: a lack of essential group-work skills

'Simply placing students in groups and telling them to work together does not in and of itself result in cooperative efforts. There are many ways in which group efforts can go wrong.' So say Johnson and Johnson (1994: p57), and of course they are quite right. Educators need *'to foster students' group skills over time, building more complex group activities as students become more familiar with the group context.'* (Teaching & Assessment Network, 1999: p5). Burdett (2003: p179) stresses the point that: *'group work can be hard work emotionally and intellectually; and that this fact is sometimes overlooked by group work advocates and practitioners'.*

In situations where students who have not previously been introduced to group work, and lack the necessary skills, any instructor who uses group work as a major component, and does not prepare the students appropriately, is almost inevitably condemning the students to a traumatic and probably unproductive experience. This is certainly one of the major reasons why some instructors choose to revert to more traditional methods.

Solution #3.1: introduce new courses.

Potentially the most powerful way to ensure that students are both enthusiastic and appropriately prepared for group learning is the introduction of a core course to cover the requisite skills. This has the dual effect of instilling in students the idea that the university regards such skills as of significant importance, and of providing a sound preparation for future courses. Of all of the solutions presented in this paper, this is the only one that may lie outside the purview of the instructor, since it requires a change to the overall program, rather than to the individual course. As such, it may only be possible to implement this solution with the agreement of program administrators and other educators.

The Teaching & Assessment Network (1999: p4) states the *'...need to ease the introduction of group work into an otherwise "traditional" degree framework, fit group work into the semester system and to train academic staff in their understanding of group skills and theory'*. The importance of these three aspects cannot be overstated - in particular, the need to provide not only the students, but also the instructors, with the necessary group work skills.

Ideally, a short course for staff should be run on a regular basis, and an introductory core course for students, in the first year of the program, should be introduced. Both staff and student courses should cover key generic skills, of which group work, team-building, and effective communication would form an integral part (other parts of the course could cover topics such as computer literacy, presentation skills, email etiquette, proper referencing, etc).

This solution enables any courses within the program to utilise group learning, confident that the key requirements and skills will already be familiar to the students prior to the commencement of the course. Similarly, students will be aware that group work may form part of the standard learning process, and are likely to approach such courses with far less trepidation than might otherwise be the case.

Solution #3.2: cover the skills required at the beginning of the course.

In cases where students participate in group work without any prior formal training in group skills, a minimum of two weeks at the start of the course should be devoted entirely to the core advantages and benefits of group learning, and the skills required. This may seem difficult – perhaps impossible – to many educators convinced that they have to “*cover the content*”, and that they “*cannot afford to waste two weeks*”. However, preparation of students in this way is an essential prerequisite for successful group work, and “*covering the content*” somehow assumes less importance when one steps out of the more usual lecture / seminar / tutorial mode.

Amongst the skills that should be stressed in these sessions are group facilitation, effective online communication, ‘netiquette’, and responsibilities to other group members. Excellent discussions of the processes involved in a successful group formation phase can be found in Kagan (1997) and Daradoumis and Xhafa (2005).

Problem #4: the free-rider

The free-rider effect (Kerr and Bruun , 1983) is probably the most commonly cited disadvantage of group work; that is, when one or more students in the group does little or no work, thereby contributing almost nothing to the well being of the group, and consequently decreasing the group’s ability to perform to their potential. In many cases, this may multiply into additional unwanted effects: first, of gaining unwarranted marks for the free-rider; second, of damaging the morale of the other members of the group; and third, of lowering the reputation of the educator and the institution for fair dealing and justice in assessment.

An example of this attitude is illustrated by Burdett (2003: p178), quoting a University of South Australia graduate student:

‘I acknowledge the reasons for including group work as a component of a university course; however due to the nature of groups, it usually falls to one or two individuals to do the bulk of the work. As a student motivated to achieve the best results of which I am capable, I find it frustrating that not only do other students get a free ride so to speak, but that through being forced to work in groups, the task becomes more difficult than it would have been if done alone.’ (University of South Australia, 2001)

Levin (2002b: p3) states that the educator ‘*may be the last person to know that there are students who consider that there is a free-rider*’ hiding in their group. Students are ‘*likely to feel that the issue is one that they should deal with themselves, and ... be reluctant to tell tales on a fellow student*’. It is appropriate then that educators pride an environment in which students involved in group work indicate the responsibilities they will be undertaking within the group, as a means of maintaining the integrity of the group and as a way to lessen the free-rider effect.

Solution #4.1: use pressure from the instructor.

The instructor should make potential free-riders within the group aware that they will lose marks – and indeed run the risk of failing the course – if they do not contribute. It is not sufficient – nor indeed fair – to impose rulings to this effect only at the end. It is essential that assessment rules be made explicit prior to the commencement of all group work.

Unfortunately, if this is the only method used, constant monitoring by the instructor is essential. This can be time-consuming and stressful at best, particularly in an online environment, and other solutions are generally preferable.

Solution #4.2: use peer pressure openly and unashamedly.

The best monitors of the quantity and quality of any single student’s contributions are the other students within the group. As such, students who seem to be free-riding should be encouraged by the other members of their group to ‘pull their weight’. Such reminders should occur on a regular basis throughout the entire group learning process – not

just near a deadline, when it may be too late. It is therefore a primary responsibility of the instructor to ensure that all group members are aware right from the start of their own responsibilities in this area.

Many educators are already doing this to good effect. For example, Chin and Overton (2005: Pp 2-3) state in their primer that:

‘Depending on the assessment tools employed students can both receive and provide feedback to their peers. This process helps students gain a better appreciation of the skills being developed and how to work effectively as a group. For example, peer assessment of a presentation can improve student understanding if they have to assess their peers on the same criteria with which they will be assessed.’

Such assessment does not have to include any element of marking. However, the best solutions do just that.

Solution #4.3: employ a marking scheme that penalises free-riders

The most appropriate and effective antidote to the free-rider problem is to ensure that all students are well acquainted, at the commencement of group work, with the marking scheme to be employed, and that such a scheme is clearly seen to penalise free-riders.

The unfortunately-common scheme of giving equal marks to all group members is **not** recommended, for such a scheme almost invariably invites free-riders to take advantage of the other members of the group. Why would the savvy and more industrious student spend time on this subject, since work by other students will get the marks, and their time can be more profitably spent on other subjects? Therefore, a marking scheme needs to be employed that provides different marks to group members based upon their individual contributions.

One such method is to build into the assessment process an element of peer and/or self-assessment, thereby giving students the ability to demonstrate independent value within the group confines. Watkins and Daly (2003: p.9) have suggested a seemingly effective assessment method whereby the group participants are awarded bonus points by their peers, in the hope that this

‘...may reduce social loafing through the ‘group evaluation’ effect and they may reduce free riding by enabling some equitable allocation of outcomes to individual input.’

Relying as it does on differential individual assessment, this solution is covered more fully in problem #7.

Problem #5: possible inequalities of student abilities

Many researchers have expressed the hope that the online environment would, of itself, produce more equal levels of group participation than might be expected in a face-to-face environment (Harasim, 1993; Harasim et al, 1995; Sproull & Kiesler, 1991). This hope has not always been well-founded, however, with certain individuals or groups often dominating discussion (eg Herring, 1993).

Winkworth and Maloney (2002) state that a fundamental dilemma in groups can be the need to temper the individual students’ needs with those of all the students in the group. In successful groups, individual students may need to sacrifice some aspects of their individuality for the benefits of learning in a group (Roschelle & Teasley, 1995). One of the supervisor’s tasks is to monitor the groups to try to ensure that the strengths (and not the weaknesses) of individual students’ abilities are activated, while trying to ensure the success of the group as a whole.

There is always the possibility that the most able student(s) within a group may fall victim to what has become known as the sucker effect (Kerr, 1983), which in many ways may be the reverse of the free-rider effect. The sucker in the group is the student who is perceived by other members of the group to be the most capable, and is therefore left to carry the bulk of the workload.

It should be noted at the outset that the sucker effect is not all bad. It can result in weaker students learning more effectively, and perhaps going on to be suckers themselves in later groups. The situation that must be guarded against is one where the sucker does all the work, and is not rewarded appropriately for it. Also, of course, it is possible that the other students within the group rely so much on the sucker to do the work that they fail to learn anything at all.

In certain circumstances, the free-rider and sucker effects can feed on each other. Ruël et.al. (2003: p.3) aptly stated that ‘...*due to a feeling of being exploited by free-riders, one also reduces one’s own effort, because he or she does not want to be seen as a sucker who does all the work for his or her co-students*’, and noted that there are several conditions which will create the sucker effect, including ‘...*the type of task to be performed, the number of students within a team (group size), the type of performance and reward (on an individual or a group basis), the identifiability of the individual contribution and certain group characteristics.*’ (Ruel et.al., 2003: p.3)

The good news is that the sucker effect is fairly easy to overcome.

Solution #5.1: identify potential “suckers” in advance.

It may be possible to identify potential “suckers” in advance – they will generally have proved themselves via past work to be very able students. If so, some confidential correspondence between instructor and “sucker” may be all that is required, stressing the benefits of group work, and that perhaps all within the group may benefit from participation, rather than being supplied with finished work by the “sucker”.

Solution #5.2: employ an appropriate reward scheme.

Just as there should be potential penalties for the free-rider, so there should be potential rewards for the sucker. If the rewards are sufficiently high, for example better marks, every group member will want to be a sucker, and the group may then out-perform expectations. If, despite best efforts, a clear “sucker” still emerges, the potential rewards should be arranged in order to be appropriate to efforts (eg Webb, 1994: p13).

For example, Watkins and Daly (2003: Pp.10-12) discuss the use of bonus points for group members that combats both the free-rider effect and the sucker effect. Perhaps the fairest and most easily defensible method is to use an appropriate combination of self, peer, and group assessment techniques, where assigned marks are correlated with individual efforts, as judged by the members of the group themselves. The sucker will likely not object to being a sucker if he or she is adequately recognised by other members of the group, and their efforts appropriately rewarded, and other members are more than often happy with such an outcome. Successful methods such as these are described in detail by many chapter authors in (Roberts, 2005).

Solution #5.3: use subgroups within groups where feasible

Apart from suggesting the use of bonus points, Watkins and Daly (2003: Pp.10-12) also put forward the idea of using small subgroups as a method of creating a more equitable working situation. Such groups-within-groups generally make the free-rider work harder, and ensure that the sucker does not have to carry the entire group. Alternatively, instructors may find that it is easier to begin with a smaller group size; this small size will not automatically mean that there will be no free-rider or sucker effect, but it does mean it is easier to observe and intervene if necessary when it occurs.

Problem #6: the withdrawal of group members

Courses conducted online or by distance education notoriously suffer from higher than average attrition rates (eg Simonson, 2000), often because of feelings of isolation (Hara and Kling, 2000). In a more conventional learning environment, one where group work is not being used, the withdrawal of a student normally has little or no direct effect on the work or grade of other students. Of course, this may not be strictly true, since the student may be in an informal study group, or have developed a friendship with other students, etc; but students learn and are officially

assessed on an individual basis. With group work, it is common for those students who remain in the group to feel disadvantaged if one or more of their members officially withdraws, or disappears from the group for whatever reason.

Although probably the least-cited of the seven problems listed in the paper, this has the potential to be the most serious, since the student concerned may have been assigned some component vital to the success of the group as a whole. While the withdrawn student can be awarded zero, what should happen to the other members of the group?

Solution #6.1: take no action.

In circumstances where the group member drops out very early in the course, or does not play a vital role within the group, it may be appropriate to take little action other than a minor reassignment of roles, which could be managed by the instructor, or by the group members themselves, or a combination of both. In some instances, constant monitoring of the group may be enough to alert others to the possibility of such an occurrence, which can then lead to early intervention before the matter becomes crucial.

Solution #6.2: use a multiplier on the group work.

Despite effective monitoring, it often occurs that a student will withdraw at a vital stage of a groups work, and sometimes this may be completely unanticipated. This can happen for any number of reasons, some quite beyond the control of the student concerned. Personal circumstances change, accidents happen, etc. How can the other students within the group be treated fairly in such cases? Taking contributions so far into account, it may be possible for the instructor to grade each member of the group in the normal way, and then apply a multiplier to make up for the disruption. The size of the multiplier of course will be dependent upon the particular circumstances, how late the withdrawal occurred, and the degree to which the missed contribution played a role in the outcome of the group.

Solution #6.3: use a multiplier on the remaining course work.

In the most problematic cases, the instructor may decide that the effect of the withdrawal is such that the group cannot be assessed. In such cases, a multiplier can be used on the remaining assessment tasks, such as other group tasks, or individual components such as the end-of-semester examination. The imposition of extra assignment items to “make up” for the missed group work is generally **not** a recommended course of action, since this can be viewed as an added imposition on students who have had to cope with circumstances beyond their control, and have otherwise fulfilled all of the necessary requirements.

Problem #7: the assessment of individuals within the groups

The traditional view of assessment has always been something along the following lines: assessment is about grading. One or more instructors assess the work of the students, with the primary – and perhaps sole - aim of assigning fair and appropriate grades to each of the students at the end of the course. An alternative view, and one that has claimed a large number of adherents in recent years, is that assessment can and should play a vital part in the learning process itself (Bain, 2004; Roberts, 2005). No matter where one stands on this issue, however, at the end of the day, individual students must be assessed. How can this be done fairly if group work is used?

Assigning group grades without attempting to distinguish between individual members of the group is both unfair and deleterious to the learning process, for many reasons which should be apparent from earlier discussion, and may in some circumstances even be illegal (Kagan, 1997; Millis and Cottell, 1998).

Specifically talking about group work, Webb (1994) stated that the

‘... purpose of assessment is to measure group productivity...’

but then went on to stress that another purpose of assessment is

‘... to measure students’ ability to interact, work, and collaborate with others and to function effectively as members of a team. Team effectiveness involves many dynamic processes including, for example, coordination, communication, conflict resolution, decision-making, problem solving, and negotiation.’

Several effective solutions may be employed to do exactly as Webb suggests, that is, to measure group productivity and to measure the individual students’ abilities within the group. Exactly which of the solutions is the most appropriate will depend upon the circumstances.

Solution #7.1: use individual assessment.

While the learning may take place in groups, it may still be appropriate to assess individually. For example, while skills may be built up by a series of group projects throughout the semester, the assessment of the student learning process may take place through individual tests or assignments placed throughout the semester, or via an end-of-semester examination, or via a combination of these.

This may be a perfectly valid solution in many cases. The down side is that some students may see little value in participating in the groups, if such work is not directly assessed. It is therefore up to the instructor to ensure that the assessment items, while being individual, nevertheless test the learning that has occurred within a group setting. This may not be easy.

Solution #7.2: assess individual contributions.

If the group work is to form the bulk of the assessment, the instructor may be in a position to assess the contributions of individual students throughout. This method may be employed in either the face-to-face or the online situation, but is perhaps most effective in the latter, since individual contributions can be stored and reflected upon before final grading takes place.

Instructors may in addition require students to record their own contributions and reflect upon them, in the form of a diary or journal, or perhaps in the form of a more structured portfolio, to be submitted to the instructor at the end of the course.

Solution #7.3: use self, peer, and group assessment techniques.

Self, peer, and group assessment techniques can be extremely beneficial for both students and instructors in all forms of online collaborative learning. Students who learn in groups are generally very aware of their own, and others’, relative contributions to the group. This knowledge can be usefully employed during assessment.

A number of strategies to determine individual grades based on peer reviews by other students are possible – see for example (Li, 2001). One technique is to have students within each group anonymously rate their fellow group members. For example, one scheme has the students log on at the end of each piece of group work, and anonymously rate their fellow members on a scale ranging from -1 to +3. A rating of -1 indicates the group member was actually deleterious to the group (that is, the group would have performed better had the student not been in the group); 0 indicates that the group member’s contributions were negligible or non-existent; +1 indicates a below average contribution; +2 indicates an average contribution; and +3 indicates an above average contribution. The mark for the performance of the group as a whole is then divided appropriately to each group member. A number of different formulae can be used for this, depending upon the requirements of the instructor.

An alternative scheme uses a pie chart. Students are advised to divide up the pie according to their relative contributions to the group. Since this is done by all students anonymously and online, there is little fear of repercussions from aggrieved students. Experience has shown that this method generally works well, and is accepted

– and even appreciated – by students. Once again, the instructor retains responsibility for final grades, but utilises the student’s recommendations when deciding how to reward individual contributions.

A variety of other techniques utilising self, peer, or group assessment in an online learning environment can be found in (Roberts, 2005). Sample forms that may be used as rubrics for self, peer, and group assessment can be found in Barkley et al (2005).

Conclusion

This paper has attempted to help those considering the introduction of online group learning into their courses, by listing seven of the most common problems, and describing solutions for each. It may of course be argued that this is far from an exhaustive list, and that there are other potential problems of online group learning that have not been dealt with here. While the authors agree that is undoubtedly true, they are also of the belief that the benefits of online group learning are compelling, and they hope the solutions presented here will be sufficient to encourage other educators to take the risks, discover the benefits for themselves, and report the results, so that others may be likewise enthused.

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