



RESEARCH LESSON STUDY REPORT

How can the engagement of pupils who are lacking efficacy in group work situations be improved in exam classes?

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Abstract

Background and purpose: The purpose of this research is to investigate how the engagement of exam-class pupils, who are lacking efficacy in group work situations, can be improved. The pupils were perceived by the teacher as conducting themselves in an unproductive manner when previously given tasks involving group work.

Aims: To observe a number of different approaches to how students integrate in group work within a DT classroom, and to draw conclusions about the impact of choosing particular group work situations on the oracy skills of discussion, interaction and listening and responding to their peers.

Study design or methodology: The teachers used a research lesson study design and observed classes in three different observation cycles. The observation methodology was to observe dynamic interaction between pupils when they self-selected who they worked with in a group situation, compared with when the teacher selected the groups. The particular class involved was 20 in size, comprising 14 boys and 6 girls, and the same class was observed on each occasion.

Findings: Students who self-selected their own groups often worked well together, despite not placing themselves in a group that their teacher perceived as the most effective. Some students, when allocated a group by the teacher, felt unable to orally participate effectively in that particular group setting, and they did not have the opportunity to demonstrate effective oracy skills in either their small-group interactions, nor in feeding back verbally to the wider class when summarising or evaluating their work.

Implications for practice: Teacher judgement of the effectiveness of groups remains a vital component of effective group work, but it can be tempered with the notion that self-selecting friendship groups may still produce effective outcomes from an oracy and workflow perspective. Other factors, including clear allocation of roles within the group, motivation of the individuals concerned, familiarity with teammates and individual personality traits likely play a part, but were beyond the scope of these observations within the time limit set.

Keywords: oracy, group work, workflow, motivation, participation

Context

The school is an independent, co-educational establishment in Hertford, with 909 pupils on roll as of the time of the observations. The particular class observed was a Year 10 Design and Technology GCSE class, in the age ranges of 14 to 15 years old. The pupils were predominantly boys – from a class of 20, there were 6 girls, and 14 boys.

Overall aims of lesson study

The school is in the second academic year of embracing oracy initiatives, based upon the work of Emeritus Professor Neil Mercer and Alan Howe. In this particular class, several factors were worthy of consideration. One - effective group work within small teams is a vital part of the design and creative process in this subject. Another - some of the students within this class struggled with their motivation, their attention, and their oracy skills. Another factor was to investigate if changing the dynamic of small groups would positively or negatively impact their mid-lesson work, the oracy skills they deploy, and ultimately the outcomes of what they have been instructed to produce.

Existing research drawn upon was that of Mannix & Neale (2005), who examined the contrasting views that diversity within groups would enable fresh perspectives and knowledge-sharing approaches to assist in solving problems during group work activities, compared to the perspective that diversity creates social divisions, which then negatively impact the performance of the particular group. Mannix & Neale (2005) examined three theoretical perspectives: the similarity-attraction paradigm, self and social categorization, and information processing.

In the similarity-attraction paradigm, similarity on human traits such as beliefs, values, attitudes tend to contribute towards interpersonal attraction and liking of others. The paradigm was conceived in order to understand one-to-one relationships, but it would not be unreasonable to apply the paradigm to small group settings of three or four people. Mannix & Neale (2005) drew similarities between this and the self and social categorization paradigm, whereby individuals categorise themselves along the lines of ethnicity, gender, particular belief systems, and subconsciously utilise this when socially categorisation members of their group. In essence, members within a group tended to judge individuals who were outside of their group more stereotypically. The contrast with these two paradigms is the information processing approach, which asserts that diversity within groups draws upon the benefits of different belief systems, approaches, and values, and that this benefits the group. Mannix & Neale (2005) observed that "...surface-level social- category differences, such as those of race/ethnicity, gender, or age, tend to be more likely to have negative effects on the ability of groups to function effectively." However, "underlying differences, such as differences in functional background, education, or personality, are more often positively related to performance—for example by facilitating creativity or group problem solving..." The key finding from this research is that the group process needs to be carefully controlled.

In the years that have elapsed since this study, the focus on workplace diversity has increased greatly. One point to make is that differences in terms of race, ethnicity, gender, age, and cultural background are deeply complex, and likely deserve to be categorised as more than simply 'surface level'. Perspectives arising from such diversity can positively contribute to success in group activities,

due to the added insights and alternative approaches that a diversity of groupings brings to the team. The alternative approaches can lead to more challenges of established viewpoints, more critical thinking, and potentially a mitigation against cognitive bias within a particular group.

Stahl and Maznevski (2021), in a meta-analytic retrospective of research on their original 2010 article, revisited their conclusion that “...the results suggested that cultural diversity does not have a direct impact on team performance but rather that the effect is indirect, mediated by process variables such as creativity, cohesion, and conflict; and is moderated by contextual influences such as team tenure, the complexity of the task, and whether the team is co-located or geographically dispersed.”

The authors found that cultural diversity was unrelated to the effectiveness of communication, and that it was positively associated with satisfaction of individual team members. Furthermore, “...collectively, these findings supported the conclusion that cultural diversity is associated with divergent processes. More diverse teams experience the process gain of increased creativity, but also the process loss of increased task conflict...”; moreover, the notions of ‘surface’ or ‘deep’ level cultural diversity were in the main unrelated to team outcomes.

Certainly, a relevant question that occurred to us is - what level of control is required? What occurs within diverse small group settings if the teacher allocates individuals in a seemingly random manner, but does not control any other aspect of the group settings?

Another piece of research informed our approach - that of Chang & Brickman (2018), who noted that group work can in fact yield tangible gains in student reasoning, motivation, and outcomes - but that in order to reap such gains, all students within the group setting must contribute. Chang Y & Brickman P (2018) observed that particular strategies - such as assigning particular group roles, group ‘contracts’, and the careful use of peers in terms of rating and evaluating fellow group members - could all positively contribute towards improved outcomes with a group setting, because they encouraged student participation. Intriguingly, Chang & Brickman (2018) also noted that high-performing students tended to recognize the benefits of group work, irrespective of whether the group they were in itself scored highly on a particular task. They also noted that students in low-performing groups had a tendency to harshly rate their group peers, whereas students in higher-performing groups more generously rated their peers, even if the members themselves were low-scoring. Perhaps the most interesting aspect of this research is that, irrespective of group composition or even performance level, students tended to report positive experiences with their fellow group members, and that “...when group members function interdependently, collective efficacy beliefs have been shown to provide a greater impact on performance: groups with higher self-efficacy beliefs were more likely to encourage group members to use resources more effectively and to engage in higher-quality discussions.” This suggests that teachers who successfully create a collective group efficacy within the groups they assign - or that they allow pupils to assign - have a much stronger chance of improving educational outcomes using group work.

Inquiry plan and activities

Three observational cycles were devised, with the aim to observe the same Y10 DT class and note the differences in pupil dynamics and group outcomes at the end of each observed class. In practice this proved difficult to achieve due to time constraints and timetabling factors.

The methodology used was to observe pupils as they interacted with their groups, and to capture the observations on a template devised by one of the observational team.

The initial focus was on particular pupils, although during the second observation two of the pupils were engaged in a different activity with another teacher, so we instead looked at the group dynamics of the entire class. We then reverted to focusing on particular pupils in the third observation. The choice of pupils for the main focus was suggested by their existing DT teacher, who observed that those particular individuals tend to lack efficacy when given group work, and was interested to see how their focus and productivity might shift when allocated specific groups by their teacher. The DT teacher was therefore the person overseeing the class that the other two teachers observed over the course of three observation cycles, and the other two teachers remained as observers during the cycles.

We did speak with the pupils during the sessions, but not afterwards, and this was not captured on a formal interview template. The teaching team engaged in post-lesson discussions in order to inform the next cycle, although the second cycle involved a shift in focus due to the fact that two of the previously observed pupils were not present in the classroom during the second observation.

Ethical considerations and relationships

We explained to the students that we were simply observing how they were working in small group settings, in order to see if we could learn anything from their participation in a DT class that could be applied to a CS class. The particular three students that we focused on – the ones identified by their teacher as lacking efficacy in group work settings – were not aware that we were observing them any more closely than their peers; we did not want to influence their behaviour by having them know that we were looking at their group work dynamics, and thereby give us a false picture that they were all much better at group work than their DT teacher had indicated. It is entirely possible that had Student A been made aware of the fact that we were observing him, he would not have modified his behaviour much, but Student B and Student C would likely have adapted their approaches.

The students were all willing to be observed and conducted their group work with a minimum of interference from the observers. Both safety (in a DT classroom) and safeguarding matters were in line with the published school policies.

Anonymity is preserved by removing the names of the observed students, and replacing them with the pseudonyms Student A, Student B and Student C.

Classwork tasks

Task One

The groups were set the task outlined in Appendix A - within each group, pupils were allocated specific tasks such as instigator, builder, and summariser. There was one instigator, all three pupils

were builders and there was one summariser. The summariser in each group was selected by the teaching staff because of their reluctance to engage with the task in hand when asked previously to take part in similar activities. The specific aim being to prompt the reluctant participant to take a more active role in their learning.

Oracy content

The task involved the instigator setting out to his/her group how they would produce the action plan and the format for presenting it. The role of the summariser was to present the group's action plan to the rest of the class set, which was made clear when the task was introduced.

Task Two

Task two was set out in an identical manner but involved the use of measuring instruments that can be found in many workshops such as a vernier gauge, micrometre, steel tape & steel rule. The resource used can be located in Appendix B.

Findings

Cycle 1 observation

Students were placed into small groups of three or four by the teacher, and the groups selected were chosen so that not all students were in their favoured friendship groups. One student (STUDENT A) appeared especially disgruntled with this - he has been identified by his DT teacher as somebody who occasionally struggles to motivate himself to work to his maximum, and who has the potential to frivolously engage in non-educational dialogue with fellow students within his immediate friendship group. This particular student was disengaged throughout the cycle one activity. He was observed to physically move away from the other two members of his group, avoid participating in problem-solving activities or discussions, and attempt to leave the group and join his friends. The DT teacher ensured that he was unable to do this, resulting in low achievement from the student involved on this particular occasion. He claimed that he did not know what his task was, when in fact we had observed the teacher giving him very clear instructions, and he disengaged almost entirely. In contrast, the other two members of the group worked very well together, and we observed that they seemed to benefit from his lack of intervention.

The two other students (STUDENT B and Student C) both appeared to benefit from teacher-controlled groupings, and they worked well within their groups - using oracy well and engaging in educational activities with their teammates. STUDENT B was more distributed - he moved around a number of other groups although he did continually return to his allocated group, and he did work well within his team. The group belonging to Student C was involved with staining a noughts and crosses set, which was a different activity to those of STUDENT A and STUDENT B, but the team worked successfully and in a collaborative manner.

During the summary presentation, STUDENT A was distracted and disengaged, gravitating away from his allocated teammates and towards his friends.

STUDENT B was invited by the teacher to summarise the work of the group, but he declined, and another member of his team took the lead. She presented well and handled questions adroitly.

Teachers were not able to meet between the first two observed lessons, but they did meet before the third observation in the context of a wider Oracy meeting, and a third observational cycle was arranged.

Cycle 2 observation

The group size was reduced in the next observation lesson, with pairs instead of threes. This seemed to suit student A better and he did converse more with other students and was also observed to be on task for more of the time. However, student A still seemed unmotivated to complete the work given and attempted to occupy his time with other tasks. Student C was working on a different task and student B was away, so students D and E were observed. Student D was observed to be in discussion with their partner at the beginning of the task and then work independently for most of the time. They were occasionally observed in brief conversation with each other; these seemed to be in the nature of check-in periods to confirm they were both still OK with the work. They both seemed focused on the task and the set-up of the groups. Student D was observed to be much more animated in terms of their oracy, spending more time in discussion with their partner. It was not observed if this was all in relation to the task being completed, however the students spend some of this time looking and seeming to discuss and complete the work shown on one iPad. Student D seemed to engage well in the activity and be motivated to complete the work.

Cycle 3 observation

In the lesson for the third observation the students were allowed to self-select their group composition and size. Student A was in a larger group than in the first observation and we were told that he had chosen to be with his friends and other students he felt comfortable working with. Student A was observed to be much more relaxed in this group, conversing with the other students often. It was unclear if these discussions were related to work or just general talk. However, at the end of the activities, Student A was selected by the teacher for a verbal presentation of the group's work to the class. His presentation was relatively confident, with good use of oracy techniques, and seemed to be an accurate summary of the task the group had been completing. This would indicate that he had been more engaged than in the previous group configurations. Student B was not engaged in the same group work but again seemed to be engaging well verbally in the task they were working on. Student C was in the same group as student A and seemed to be actively engaging in the task using their iPad to complete the notes on the shared document (allowing all the group to edit at the same time). He was active in his verbal engagement with the other students and seemed to be using verbal check-ins in relation to the work as well as more in-depth discussions.

Meetings between lesson observations

Due to the limitations of availability along with the constraints of curriculum and timetable we were not able to meet in person after the observations and brief email exchanges were conducted instead. This is where the changes to group construction were decided, however these were not always able to be put into practice due to changes in the whole class composition and lesson content which is normally adapted depending on the progress and evaluation of the previous lesson.

The observations confirmed some of the findings of Mannix & Neale (2005) and of Chang Y & Brickman P (2018) in the following manner:

- Some pupils appeared to benefit from the teacher selecting group members - the diversity did not seem to negatively affect certain groups
- Some groups were adversely affected - one in particular where the student self-ostracised and disengaged from the group activity, claiming a lack of understanding of the task and that he did not feel part of the group that the teacher had chosen
- Larger groups (above 3) seemed to benefit students who were sometimes less engaged with group work although this could also be related to group composition.

Reflective evaluation on the process

It was not obvious from our observations that tighter teacher control would have significantly benefited the efficacy of the group work, or of the oracy whereby the students articulate their work post-task. There is therefore an avenue for potential further research in the area of allocating particular roles to students and evaluating the impact of this upon group outcomes, which could then be compared and contrasted with groups that students selected, and groups that were selected by the teacher.

One of the teachers observing the group followed the third observational cycle with an informal conversation with Student A. Student A expressed that he preferred to self-select his own groups, and that he felt that he was more productive as a result. Conversely, he acknowledged that he was less productive when asked to join a group that his teacher had selected for him. He also noted with pride that he had completed his particular piece of coursework within the context of those lessons.

It may be that teachers need to examine how to determine the effectiveness for learning this type of group work as the assessment of this is often difficult given the joint outcomes of the tasks. It may be that groups who seem to be having more animated conversations not all of which are related to the work may be more effective for learning than it appears, in contrast to groups who seem to be more quietly completing the task in what seems a more organised manner.

Since the conclusion of the observation cycle, the DT teacher involved has continued to experiment with groupings and has observed that the pupils selected for the original observations can be positively influenced by those around them. He noted that there is a period of disruption in terms of class and group dynamics, but that the pupils are now being positively influenced by their peers when placed into teacher-chosen groups.

Next steps

The school concerned could allocate staff to observe group dynamics in which the teacher allocates specific roles to students, or that students allocate specific roles to each other. The emphasis would be on observing if greater teacher control of the groups would positively impact the outcome of the group work.

References

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Appendix A

GROUP WORK Task 1 - Production Plan

You are asked to manufacture sample pieces for a practical experiment that involves bonding together a variety of materials with four different adhesives. The sample pieces are to be manufactured from plywood, MDF, aluminium & acrylic.

These samples can be manufactured using traditional machinery and hand tools or our CAD-CAM equipment.

In your groups work out a production plan for each manufacturing method listing tools, equipment software etc, & some general H&S recommendations.

Present your action plans as bullet points in a table - See Example
Here are some prompts / key words to get you started.

Traditional method

- Marking
- Cutting
- Finishing
- Drilling

CAD - CAM

- Drawing
- Data handling
- Setting
- Cutting

The final task is to list the advantages & disadvantages of each method.

Appendix B

GROUP WORK Task 2 - Selecting Measuring Instruments

Writing an introduction that explained why accurate measurements are an important part of practical work

Identifying what makes each measuring instrument suitable for its intended use.

Present key findings that could be used to help a group of younger pupils quickly establish a sound understanding of measuring and measuring instruments.

