RESEARCH ARTICLE:

Groupwork in Undergraduate Research: Turning Bane into Boon

Poovendhree Reddy[1]

Abstract

Problem-based learning (PBL) using groupwork was used to engage students in undergraduate research methodology (UGR). It is anticipated that students will develop both interpersonal and employability skills during this exercise. This study explores a student cohort experience of groupwork within the teaching and learning of UGR at a South African University of Technology (UoT). The study used a qualitative approach. Students (n=28) were invited to participate after completing each research module using a non-probability convenience sampling strategy. Data collection using virtual interviews continued until data saturation was reached (n=7). Transcribed interviews were analysed using a thematic analysis strategy. Identified themes included student experiences and challenges associated with groupwork, perceptions regarding groupwork goals, working strategies and technology use, and improving the groupwork experience. Students emphasized benefits such as sharing ideas and workloads, but there were conflicting views regarding the pedagogic reason for groupwork. Students reported an increasing dependence on technology. Shared challenges included the "freeriding" phenomenon, which caused dissent and frustration. Choosing their own group members improved their experience. Peer assessment and assessment of individual contributions were supported to subvert freeriding. Groupwork requires extensive planning and management by the lecturer, particularly for PBL and UGR.

Keywords: *groupwork; research methodology; problem-based learning; cohort experience*

Introduction

In the recent past, the landscape of South African Education has shifted significantly with the curriculum renewal or reform process. One of the key arguments for this reform was to accommodate the changing nature of knowledge and the different ways it is produced. It is intended that students develop attitudes of critical enquiry and powers of analysis, among other desirable outcomes (Moore, 2003). Many previous diploma courses were redesigned into Bachelor's degrees with a concurrent shift in teaching, learning and assessment. The four-year Bachelor's degree at National Qualification Framework (NQF) level 8 requires that a research project is completed within four years. Overnight, the integration of research into a resource-constrained environment demanded that we organise and supervise the projects of large student numbers. This necessitated reimagining the learning process through various strategies: dealing with large student numbers while still reaching the goals of promoting critical enquiry and analysis. This inquiry explores the use of the strategy of groupwork in UGR.

The Research Methodology course is challenging for students because of its complex nature and material. Scholars have recommended project-based learning and problem-based learning using groupwork to facilitate learning and engage active participation in this subject (Longmore *et al*.,1996; Mekonnen, 2020). Groupwork or group projects are commonly used practices within higher Education across various subjects and specialities. Pedagogically, groupwork is implemented to encourage interactions and involvement among students to learn from one another, but is more implicitly associated with enhancing social capability and employability

[1]Durban University of Technology, PoovieR@dut.ac.za

(Matsunaga, Barnes and Saito, 2021). Graduates with "soft" skills related to effective teamwork, interpersonal relationships, communication and flexibility under pressure are in demand in the workplace (Van Oudtshoorn and Hay, 2004). In addition, groupwork may impart other qualities related to conflict management, leadership, and motivation. Groupwork creates the space for experiential and collaborative learning and, by its very nature, enables a student-centred focus, where the student assumes responsibility for active learning with the teacher as the facilitator (Fearon *et al.,* 2012).

Successful groupwork must deliver both cognitive and behavioural outcomes (Willis *et al.,* 2002). Student autonomy is encouraged when the student has to manage their time, their learning and their peers (Bourner, Hughes and Boourner, 2001); this hauls them out of their 'safe space' of passive learning into reality-based social learning. Students have developed their internal mechanisms, including a social contract for dealing with key issues; basic ground rules for group interaction, showing how students participate; and ways of dealing with group conflict (Cox and Bobrowski, 2016; Fearon *et al.,* 2012). Students have reported the perceived inequality of workload and unfair grading practices as primary concerns, as grading is normally based on the final output, and not the process of producing that output. However, the rapid advent of online learning may offer a tangible solution. Online group learning or computer-supported collaborative learning (CSCL) enhances student interaction (Balakrishnan, 2015). Discourse through online applications increases students' communication and interaction, enhances cooperative learning, reduces paperwork, and allows for dynamic monitoring and evaluation by the facilitator.

The use of groupwork in Higher Education has to be properly planned and managed by the facilitator. This is particularly relevant for teaching Research in a PBL strategy. If the research teaching is to be delivered over different semesters or years, groups must be formed early to allow them the time to form relationships and working mechanisms. Setting up a space for students to get to know one another may foster a sense of collegiality, common purpose and altruistic behaviour (Davies, 2009). Facilitators need to consider optimal group size for the related tasks, assessment, mitigation strategies for non-participation and detailed guidance regarding expectations and tasks. Too often, the casual use of groupwork to deal with high student numbers or reduce the marking of assessments ends in a hollow exercise for both learner and facilitator (Van Oudtshoorn and Hay, 2004). When planned well, groupwork may increase the facilitator's productivity; they can meet students in groups instead of individually; reducing grading and class time; thus, creating space for other academic activities (Davies, 2009).

Despite the advantages, groupwork has several disadvantages. Several of these have been noted in the literature (Davies, 2009). Assessment of groupwork is contentious. Brown and Knight (2012) identify five methods of assessing groupwork, including allocating an identical mark to all students with an overall mark with the distribution of individual marks determined by group members. Each of these methods has advantages and disadvantages, and while there is no single best practice method for assessing all groupwork (Bourner *et al.,* 2001), it is prudent to choose the correct assessment strategy based on the proposed activity. It is difficult to share responsibility, workload and task complexity on an exact and equal basis in groups, and this problem is exacerbated with increasing group size. A typical scenario is where a non-participative student depends on the academic laurels of a hard-working student or where the hard-working student is indirectly penalised for another student's lack of effort. This is referred to as freeloading, freeriding or social loafing (Van Oudtshoorn and Hay, 2004). The free-rider effect detracts from the benefits of teamwork and is cited as the biggest disadvantage of groupwork. (Thondhlana and Belluigi, 2014).

Other challenges with groupwork include difficulty coordinating schedules, poor communication and attendance at group meetings, different grade expectations and work standards and dominant behaviour of certain members, which may culminate in conflict. Small groups are key.

The ''Ringelmann Effect'' (Davies, 2009) describes the inverse relationship between the size of a team and the magnitude of a group member's individual contribution to the accomplishment of the task. The larger the group, the smaller the effort expended by group members, and the greater the likelihood of freeriding. In addition, cooperation among group members appears to decrease with increasing group size. Other studies have suggested recognising individual contributions increases effort (Davies, 2009). One study suggests that the ideal group size for minimising freeriding is a group of no more than two individuals. Even if this size may be difficult in the higher educational context, we have to prioritise pedagogy over practicality.

Furthermore, the relationship between the ethnic mix of students in a group and grades has been reported. This should be carefully considered in the South African (SA) higher education context, where the social and educational dilemma of maximising diversity in groups should occur in a safe space and collegial spirit. Once again, facilitator planning regarding group numbers and mixes is key in improving the student groupwork experience. Groupwork has many advantages in UGR teaching and learning when used effectively. Among many other skills, it may promote student collaboration and shared learning while also solving the academic conundrum of dealing with overwhelming student numbers. However, almost everyone who has worked in a group or with groups has experienced challenges (Wilson *et al.,* 2018). These challenges can lead to surface learning and wasted opportunity if ignored. It is important to continually interrogate ways to improve teaching and learning practice and find ways to navigate these challenges. The student's voice is an important contribution to this process, as successful groupwork can only be achieved when all stakeholders are engaged and invested. This study explores a student cohort experience related to the ways of doing, their gains and challenges associated with groupwork and examines student preference regarding the management and structure of groupwork within teaching and learning of undergraduate Research at a SA UoT.

Environmental Health Practitioners (EHPs) play a pivotal role within the healthcare landscape in terms of fostering preventative, rather than curative care. The Bachelor's degree in Environmental Health (NQF level 8) at the Durban University of Technology (DUT) is designed to address this issue with the inclusion of research from as early as year 2; a complete research proposal is expected by year 3, and the students submit a mini-dissertation in their final year. Problem-based learning (PBL) is used as an instructional approach in which students learn through facilitated problem-solving, where the instructor plans, guides, and supervises learning. The goals of PBL include helping students to develop knowledge, effective problem-solving skills, self-directed learning skills, effective collaboration and intrinsic motivation (Hmelo-Silver, 2004; Carlisle and Ibbotson, 2005). Apart from obvious research and scientific skills acquired during this process, it is anticipated that students also develop a myriad of personal and social skills related to project management, time management and social interactions (with their partner, research participants, stakeholders and supervisors). Groupwork is an important strategy for developing such skills within the teaching and learning of research.

In addition to skills development associated with groupwork, logistical challenges linked with the increased workload among academics in South African Higher Education Institutions have necessitated using groups to compensate for higher student numbers while striving to maintain academic integrity. Groupwork is used for the Research modules in the Environmental Health programme at the DUT due to limited available supervision capacity, given responsibilities in teaching, postgraduate supervision, independent research and community engagement. We deliberately limited these to 2/3 students per group to ensure that each student reaches the critical cross-field and exit-level outcomes of research methods learning. However, this is not the only motivation; we believe that groupwork prepares the student for employability by encouraging skills related to effective teamwork, deadline-driven goal setting and communication, which are invaluable in the workplace (Van Oudtshoorn and Hay, 2004). In addition, by interacting with others, students learn to inquire, share ideas, clarify differences and construct new understandings (Frykedal and Chiriac, 2011). While the common global

perception of groupwork in Higher Education is that it enables student learning through interactions, shared diverse experiences, deep engagement with subject concepts and the achievement of tasks collaboratively (Thondhlana and Belluigi, 2014), students may experience it differently. Although students have generally indicated positive perceptions and experiences of groupwork, problematic elements are evident, which may impact their performance (Frykedal and Chiriac, 2011). While the postgraduate research journey has been well documented, there is limited data on how undergraduates transition through this process concerning personal and cognitive outcomes, particularly within the context of groupwork.

Methodology

Ethical approval was obtained from the DUT Institutional Research Ethics Committee, and informed consent was obtained from all participants before their participation. Students were informed of the voluntary nature of participation. Any potential form of coercion was minimized by providing clear information to participants so they could withdraw at will.

The study used a qualitative approach to explore how students experienced groupwork in Research Methodology regarding ways of working, gains, and challenges. Creswell (2013) described the qualitative research method as an approach that occurs in a natural setting and attempts to make sense of and interpret a phenomenon through the lenses of involved people. Further, this methodology is holistic and emergent; in this case, the researcher has to enter a setting with an open mind and interact with participants to acquire information (Leedy and Ormrod, 2005). Thus, a researcher has the mandate of understanding rather than explaining or predicting human behaviour (De Vos *et al.,* 2011). This is particularly important when the researcher wants to evaluate student experience and engagement with groupwork and learning in UGR.

UGR in Environmental Health was previously offered at the Bachelor of Technology level and culminated in a proposal. A project must be completed in the Bachelor's degree, necessitating a prolonged groupwork engagement. A qualitative approach was therefore appropriate in this study to understand how the students experienced groupwork and if the expected learning outcomes were reached. The assessment mark will not capture the holistic learning experience anticipated in UGR. Qualitative research can enhance understanding of educational processes, because the focus is on gathering data in context and exploring participants' lived experiences (Anderson-Levitt, 2006). In other words, a qualitative strategy will provide depth to our understanding of the educational, social, and personal experiences associated with student engagement in groupwork. Qualitative research methods are predicated on understanding the significance of the "subjective meaning" that can be brought to research by individual participants and is cognisant of the "social construction" of their reality (Hesse-Biber, 2017). This approach explores the views and experiences of participants, linked to their context, and in a way that captures their voices (Creswell, 2014).

The study was conducted among students registered for the BHSc (Environmental Health) program in the Department of Community Health Studies, Faculty of Health Sciences (FOHS) based at a South African UoT. The target population included all students registered for the Bachelor of Environmental Health and registered for the module Research Methodology 101 in the second semester of 2020. The cohort of students was interviewed again after completing Research Methodology 201 in the first semester of 2021 to evaluate their groupwork experiences over the two modules. The final year, which concludes with the research project, was not included in this study. Although the number of participants was small, the researcher collected in-depth data. Sample recruitment was done through a non-probability sampling technique; convenience sampling was used, and all students registered for Research Methodology 101 in 2020 were invited to participate (n=28). Sampling continued until data saturation was reached (n=7). These 7 students were then interviewed again in 2021 after completing the second Research module.

Willing participants were invited to an MS Teams online interview. A semi-structured interview guide was used to guide the data collection process and comprised key points on understanding how groupwork within research methodology teaching and learning affected students personally and academically. Participants were invited to share their positive and negative groupwork experiences and encouraged to share potential strategies to improve them. Semi-structured interviews are "knowledge-producing conversations" (Hesse-Biber, 2017), in which the openness of the interview will enable the participants to move the conversation in a personal direction while simultaneously creating a boundary for the researcher to pursue information related to the research questions. The interviews were recorded and then transcribed.

Qualitative content analysis and thematic analysis are classified under the qualitative descriptive design (Vaismoradi *et al.,* 2016). Thematic analysis, a method for "identifying, analysing, organizing, describing, and reporting themes found within a data set" (Nowell *et al.,* 2017), was used to guide the analysis. The thematic analysis allowed the researcher to make sense of the collective meanings and experiences of all participants and enabled the data to be organised and reduced into relevant themes. It is also advantageous as it allows inductive and deductive analyses to capture the underlying themes (Braun, Clarke and Gray, 2017; Terry *et al.,* 2017). A preliminary coding scheme was generated, which served as a template for the data analysis. Similar themes and recurring patterns in the data were linked together, and the contrasts and differences were identified according to steps outlined by several authors (Braun and Clark, 2006; Braun *et al.,* 2017; Terry *et al.,* 2017; Vaismoradi *et al.,* 2013). Initially, data were transcribed by an independent service provider.

After transcription, the recordings were listened to again, and the written transcripts were read simultaneously. This process enabled the researcher to become familiar with the data and check for the accuracy of the transcription. The transcript for each student was read and reread by the researcher, and notes were made regarding similarities and anomalies. The second step was generating initial codes, noting potential themes and sorting data according to common ideas aligned with the aim of the research inquiry. This process enabled a systematic process for generating codes and aligning common threads in the narratives. The third step was to review themes in the collected data. At this stage, the researcher cross-checked if coded themes were related to coded extracts and created a thematic map. This allowed the researcher to focus on highlighting surface meanings of data and identifying underlying ideas and experiences that underpinned perceptions of groupwork. The fourth step was that of defining and naming clear themes that were central to the research inquiry.

To ensure trustworthiness and eliminate bias in this qualitative enquiry, the criteria of credibility, transferability, confirmability, and authenticity were used. Credibility refers to enhancing confidence in the truth of the data as well as the descriptions and interpretations of them (Cutcliffe and Makenna, 1999). The entire class was invited to participate, and interviews were scheduled randomly so that any student would be allocated an interview slot until data saturation was reached. Transcripts and emerging themes were constantly reviewed until no new themes emerged. Creswell and Miller (2000) refer to conformability as objectivity; an independent service provider did transcription, and the recordings, notes and transcripts were analysed in tandem. The element of transferability was accomplished by supporting the results with appropriate direct quotations from participants in the report. Although a small sample was used, this study can be useful for planning and implementing groupwork in UGR in other Environmental Health programmes in South Africa. Authenticity was ensured by collecting sufficient data and using excerpts of participants' exact words to substantiate results. This added to a rich description and interpretation of the data to enable readers to understand the context and experiences of students grappling with groupwork in UGR.

Findings and Discussion

Four broad themes emerged from the data, which included student experiences and challenges associated with groupwork, perceptions regarding groupwork goals; working strategies and the use of technology; and improving the groupwork experience.

Student experiences and challenges associated with groupwork

Data showed that students experienced positive cognitive and motivational influences from participating in groupwork. Rather than the notion of "many hands make light work", students seemed to value learning from another perspective while also looking for validation for their ideas.

> Sometimes, my partner will have ideas that I may never even have thought of. Or sometimes, you need someone to recheck, cross-check your work. So, she may pick up something or an error that I didn't see. So, in that way, it's been helpful (7, RM2).

Matsunaga *et al.* (2021) agree that the pedagogical aim of groupwork is to foster collaborative learning and enhanced capability. This seems to foster "intellectual" confidence that is particularly important in Research Methodology training (Phillips and Russell, 1994). In addition, groupwork also builds individual, transferable skills such as leadership, time management, communication skills and mutual engagement (Davies, 2009). Students from this study emphasised communication, time management and interpersonal relations as three of the most important skills learned.

> the one thing I think that is a good thing is that we don't procrastinate and leave things to the last minute. As soon as we get a task, we start working on it immediately, and there's like a mutual understanding between us. So, I think we work very well together (7, RM2).

> There's a lot, of extensive skills, like I said, communication skills, listening skills and speaking skills. And also, it helped me because we have to share ideas and, in the end, we come upon the right solution. So, I can say working in a team is good (3, RM1).

> I think the best skill I learned was like how to work well with my partner in a group. Like how to share the workload and manage our time better. So that was like how to communicate better with other group members and the other people in the course (5, RM1).

These transferable workplace skills are invaluable in preparing the student to work in teams and towards common goals in the workplace. Environmental Health employers have identified communication skills (both written and verbal) as lacking in graduates, and groupwork may provide the opportunity to enhance these graduate attributes. Other authors have agreed that groupwork promotes teamwork, creativity, cooperative working methods, understanding one another, opportunities to learn from others' experiences and perhaps new ways of doing things, ways of dealing with conflicts and disagreements and preparedness for working in culturally diverse work environments (Thondhlana and Belluigi, 2014). However, there are significant challenges, and some students do not like working in teams.

> I feel like I work better on my own. Because like I can do anything anytime whenever I'm working on my own but then whenever I have a partner it means I have to like do everything, make amendments alongside and know that my partner needs to also fit in. I cannot be making decisions on my own (4, RM1).

> I like working alone. We have some issues with our partner, for example, if you set a time for both of us to do the project and then he becomes unavailable and everything (2, RM1).

Participant 4 (RM1)'s response indicates that groupwork adversely affected her autonomy in planning and executing her work. This conflicts with one of the intended outcomes of groupwork, which is to promote student autonomy, whereby the responsibility for learning is transferred to the student (Bourner *et al.,* 2001). Participant 4 shared her preference for working alone, citing difficulty coordinating schedules and poor communication. This may be related to one of the major obstacles to successful groupwork; the "freeriding" effect (Hall and Buzwell, 2013; Thondhlana and Belluigi, 2014). "Free-riders" are group members who do not make a fair contribution, lack motivation and commitment to the group goals and benefit from other members' work without investing their own time and energy (Watkins and Teasdale, 2004). High-achieving students may feel frustrated by groupwork, fearing lower grades and unfair work distribution. These frustrations may lead to the breakdown of collegial relationships and mutual respect within the group and the classroom.

> Sometimes in groupwork, we all don't have the same energy for schoolwork, and we are not as dedicated as each other. So certain people think that if they do not submit the work, they will be done by other people because it's a groupwork. So as a group, we've become very, very lazy in a way that we think that certain people will do the work for us (1, RM1).

> For now, I don't think that we work very well because he's very slow …. he is just the opposite of me, he is way too patient with everything, he never worries about anything, he is too chilled. I am the opposite. I prioritise my schoolwork … when it's time for me to write my test, and do my submissions, even if it means that I have to stay up all night, I do that (4, RM2).

Several studies have explored the role of incentives and penalties in deterring problems such as ''freeriding'' (Strong and Anderson, 1990). Carefully planned assessments where individual effort is recognised rather than as a collective may positively influence behaviour, but outcomes of fostering teamwork and collaborative learning are lost. Penalties such as ''firing'' ''expelling'' or ''divorcing'' free-riders from the group may be imposed, but this has disadvantages. These students must be given a separate project and form an academically risky group of free-riders. In addition, it places the responsibility on the group to confront and act on such behaviour by reporting to the lecturer. On the flipside, this enables students to learn soft skills such as conflict resolution and communication, even though it makes them uncomfortable. We used peer assessment in the Research Project exit module to improve teamwork and student participation. Students must assess their team members in terms of participation, contribution and engagement. This mark is integrated into the final course mark to ensure confidentiality. Over the past, the lecturer for UGR has observed that students tend to be honest rather than punitive in their assessments. Other studies suggest that peer assessment within groupwork may eliminate freeriding and promote active group engagement (Bourner *et al*., 2001).

Perceptions regarding groupwork goals

Higher Education is responsible for ensuring students are 'work ready,' and groupwork provides a taste of dealing with organisational culture within a learning activity (Ashraf, 2004; Fearon *et al.,* 2012; Del Pozo-Rubio *et al*., 2014). Groupwork aims to develop students' employability skills by promoting teamwork, creativity, cooperation, mutual learning, learning, and conflict resolution. In addition, it is anticipated that "deeper learning" will be achieved. Thondhlana and Belluigi (2014) state that groupwork enables student learning through interactions, shared diverse experiences, deep engagement with subject concepts and the achievement of tasks collaboratively. We explored if the students understood the lofty goals of groupwork by asking,

"Why do you think we allocated you into groups in research?" Some students believed that groupwork was about motivation and co-dependence. Although this is related to the outcomes, it is not intended to act as a "check-and-prop" mechanism as perceived by the student. In addition, it was concerning that groupwork was perceived as a way to decrease student workload.

> … to motivate one another because if my partner did their work good and submitted on time, and then I'll be motivated that no, I have to do my work this way. And submit on time, you know, I think it's to motivate, I think it is to lessen the workload, I think it is to make it faster. Yes (1, RM1).

> I think it's a way to get us to learn from each other's mistakes and help each other improve (5, RM1).

Research methodology is a critical component of undergraduate courses (particularly at NQF level 8). Its complex and abstract nature is challenging for students since it is primarily skills-based. In this context, the PBL approach has been used where students are engaged with realistic, contextualized, problem-solving activities which lead to a systematic enquiry, together with developing research skills and understanding, over a three-year period. The extended engagement and required effort differ from other short-term assignments and projects. Therefore, students must be made aware of the strategic and cognitive goals of groupwork so that they become invested in reaching the outcomes. This gap was clearly evident in this study, where groupwork goals were not articulated prior to the given task. However, it would appear that a few students were more intuitive about expectations, as shown in the quotes below.

> I think we work in teams so that we can sharpen our soft skills. But sometimes it's a bit exhausting coz we don't have the same schedules (4, RM1).

> Probably so we get used to working with other people, when we enter the working world, we find it easier to work with other people (6, RM1).

Working strategies and the use of technology

When students were asked about their strategies for working within a group in Research Methodology, the majority shared two main strategies: division of work and an increasing reliance on technology. The reliance on technology is expected, particularly during the COVID-19 pandemic, where online communication is an essential skill. Discourse through mobile applications increases students' communication and interaction, enhancing cooperative learning and tracking student engagement. However, even though there are cost and time savings with video conferencing or messaging, the student will not ultimately reach all the projected outcomes for groupwork. Contact engagement to share ideas, troubleshoot and establish a repertoire are essential in a team, and this is not always achievable online, where the conversation is often stilted and cautious. In addition, Research Methodology requires data collection in a personal manner, where possible, as we are also teaching strategies for successful community engagement. This is particularly important for the healthcare practitioner who cannot operate within an online context in the workplace. Personal interactions should therefore be encouraged and supported by providing the space and time for students to meet. The RM course in the BHSc: Environmental Health was given a "day lecture" format, with formal teaching time in the mornings and "free" time allocated in the afternoons so that students are provided with time and space.

> We WhatsApp and meet face to face. We do calls, we do video calls (1, RM2).

> So, we discuss the task over like WhatsApp or something and get an understanding of what each other should do and we either share the document via our student e-mails and work on it at the same time or sometimes we would make some edits and e-mail it back to the other person (5, RM1).

Even though groupwork fostered a collaborative learning experience which was academically rewarding for some participants, some used groupwork as an opportunity to reduce or share their workloads and adopted a "divide and conquer" strategy while using it as an opportunity for "peer checking." Interacting through technology facilitated this "slice and share" approach coupled with checking on email. This did not allow for collaborative engagement and critical debate, which enriches the groupwork experience.

> … we separate the work, and she takes a certain part of the methodology. And then, I'll take the other parts of the methodology, we compile the entire methodology, and then see where we went wrong. That's, that's our strategy, we separate the work given and then combine it (1, RM1).

> So as soon as we get any task or assignment … so we first divide the work equally. So, I do one part she'd do the other and then we send it to each other to check. So, one person checks what the other one has done and then edits. It's like both of us are doing an equal amount of work, we are still checking what the other person has done (6, RM1).

Although the allocation of various tasks may be beneficial for sharing student workload, there are disadvantages to this strategy. Students tend to deconstruct the assessment into discrete bits and then reassemble, then give the final "patched piece" a once-over or peer check. This occurs frequently and has been reported by other authors (Matsunanga *et al.,* 2021). Firstly, the final work often appears disjointed, without a coherent flow, which is particularly evident in research proposals or reports where the "golden thread" of aligning aim, objectives, literature review, methodology results, and discussion is critical. Thus, students cannot understand and successfully follow through on the bigger picture because they have broken up the puzzle into little pieces without the picture on the box as a guide. The bits of work are given to their partner to check, primarily for editing and engagement on the validity of the work is lost. Secondly, by allocating work sections, students may not engage with all aspects, e.g. one student completes the ethics section while the other completes the data analysis section. This compromises broader knowledge and the ability of the student to undertake research in its entirety individually. Discursive engagement should be encouraged to reach learning outcomes, particularly as the skills acquired in research-linked courses are critical in practice for the EHP. Setting targets, collecting information, analysing data and report writing are essential workplace skills.

Improving the groupwork experience

With increasing student numbers in South African Higher Education, it is impossible to allocate and supervise individual projects within UGR. Nevertheless, quality in teaching and learning should not be compromised at the expense of logistics and coping. Groupwork provides an ideal strategy to deal with the increased workload, but it requires responsibility with careful planning and proper management from the lecturer (Van Oudtshoorn and Hay, 2004). Considering the complexity of the Research Methodology, it is important to evaluate teaching practice, particularly regarding groupwork, continually. Students shared various strategies to improve groupwork, and common suggestions included choosing their group members, increased peer assessment and additional assessment. While lecturers for other modules in the degree often allocate groups randomly, the UGR lecturer currently allows the student to choose their partners. It was believed that the subject is complex and needs a prolonged active engagement over three years. Group members who do not work well together tend to engage minimally, affecting learning integrity. All participants interviewed were very supportive of choosing their partner. Surprisingly, they did not choose friends, but rather students they trusted regarding work ethic and capability. This strategy may improve the groupwork experience and produce a better quality of work, even though the student will need to learn how to deal with people with different personalities and abilities in the workplace. Students were keen to keep the current status quo of choosing their group members.

> So, I chose her because I know how hard working she is. I know how committed, how determined she is when it comes to schoolwork (1, RM1).
>
> … students should be given a chance to choose their partners because they know who they want to work with. They know who's hands-on, they know who's dedicated, and they know was energetic for work. They know which people like schoolwork, they know which people are lazy (1, RM1).
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> … sometimes, you're put into a group, and you'll have to do all the heavy lifting. Like if you pick someone you know that's going to carry their end of the work then it's fun to work in a team if both people are doing an equal amount of work (6, RM1).

Peer assessment is currently used in the final-year Research module after the research report submission. This confidential assessment evaluates all aspects of participation and is integrated into the final mark. However, students supported a more frequent use of peer assessment, which may motivate better group behaviours.

> I think it's good because you know, sometimes you may be in a team and still be afraid to criticise others, but then with the peer assessments, we'll be able to write down our feelings (4, RM2).
>
> … peer assessment is a good idea; a person will work harder to get a good peer assessment (1, RM2).

Peer assessment in groupwork is common, but there is still uncertainty related to the reliability and validity of such practices. Perhaps, the loudest criticism has been related to fairness and personal bias influenced by relationships. However, potential biases may be negated by committing students to understand the exercise's educational purpose and learning benefits (Magin, 2001). Students must be aware of the integrity and fairness required during the process. In fact, the peer assessment process may mirror performance management systems in the workplace, contributing to both workplace readiness and graduate attributes. While the peer assessment process may cause conflict between group members and reduce cooperation, supporters see it as a mechanism to force free-riders to contribute equally (Kennedy, 2006). Students in this study prefer it more often to correct problems early in their project. However, it is also important to encourage students not to hide confidential opinions; they should be encouraged to manage non-contributing students honestly and in a non-confrontational manner. This will also prepare them for working in teams in the workplace. Peer assessment has the additional advantage of self-awareness; while the practice focuses their mind on the contribution and quality of their partner's work, they are driven to reflect on the quantity and quality of their own contributions (Stanier, 1997). If the peer assessment is done more often, then both the peer assessor and the group member benefits from this exercise, as they can improve engagement going forward.

The instructor gave the students a possible scenario for additional assessment and solicited their views. All pieces of individual work from both team members are included in all the major assessments leading up to the final research report as appendices. In effect, all "raw" work is included. Most students were supportive of this strategy.

> That would be helpful because by doing that, you'll be able to see who's actually doing most of the work and who's just allowing the other person to do everything (6, RM1).
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> If you asked them to do something and then submit it to you then I am sure they will do it on time, but then if we have to do it alone, they will just wait for me to do the work (2, RM1).

Previously, students were asked to submit minutes of their group meetings to denote task allocation. This has limited success, because it was noted that some students would submit work as allocated within the group, but the work is of very poor quality, as they use minimal effort. They rely instead on their team member to redo it or sort it out, knowing that the eventual good grade would be shared. This is worse than freeriding, since it shows a lack of respect for the members and the groupwork process. Apart from this ethical and didactical issue, the hard-working student may submit as is and be indirectly penalised for another student's lack of effort. Providing raw drafts is a way of recognising individual effort so that the lecturer can include this in the rubric of marks.

Conclusion

Pedagogically, groupwork is implemented to encourage interactions and involvement among students and learn from one another, but is more implicitly associated with enhancing social capability and employability (Matsunaga *et al.,* 2021). Groupwork provides graduates with transferable skills that are critical in the workplace. The use of groupwork using problem-based learning in Research Methodology provides the opportunity to apply theoretical knowledge and skills to real-world public health problems. Group projects in teaching RM helped students to ease the complex knowledge and concepts, and students can actively participate (Mekonnen, 2020). The study focused on the positive and negative experiences, expectations, working strategies and ways of improving from the students' perspectives. Student perceptions regarding outcomes associated with groupwork are essential to improve attitudes and enhance the groupwork experience. Students seemed to enjoy groupwork as they enjoyed the opportunity to share ideas, have someone validate or "check" their ideas and share the workload. It was clear that groupwork in Research Methodology is more complex than other subjects as it is over a prolonged period with many assessments, thus creating increased opportunity and time for dissension and conflict if not managed appropriately. The use of technology to communicate within groups has increased substantially; however, there is a need to balance this with face-to-face communication as part of the groupwork outcomes to develop interpersonal skills and encourage deep collaborative learning.

It was found that students preferred to choose their groups rather than being grouped randomly. They seemed to value hard-working students over personal relationships as they anticipated the free-rider effect from other groupwork assignments. Freeriding seriously threatens collaborative learning within a group and may be discouraged by frequent peer assessment throughout the three RM courses. Furthermore, lecturer monitoring through the submission of raw work as appendices may identify and track poor quality and non-participation. While this could prevent freeriding in groupwork, this needs to be evaluated further in an intervention study. The use of groupwork as a strategy to deal with increasing student numbers within RM should not be a casual coping strategy. It requires responsibility and careful planning and management from the lecturer, who is also obligated to provide a clear map of all outcomes and expectations at the beginning of the research journey. Continual interrogation of teaching and learning practice is also warranted. Groupwork is an invaluable strategy to deal with increased student numbers in UGR, but we need to plan, manage, mitigate, and support to improve an ongoing pedagogical quagmire.

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