

Groupwork Assessment Development (GAD): A framework for developing an effective group work assessment

Full Paper

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Abstract

Assessments that require students to work in a group are incorporated at different levels of tertiary education. The overarching purpose of group work is to develop collaborative ability which is a highly sought-after skill by employers around the world. Working in a group doesn't always ensure that all members cooperate and collaborate effectively towards achieving a shared goal. Consequently, both the students and teachers could encounter challenges in progressing with the group work and therefore, receive negative experience. In the literature, several best practices have been identified as basic elements for cooperative learning that can mitigate some of the key challenges. This paper proposes Groupwork Assessment Development (GAD), a framework for designing and conducting group assessments that incorporates some of these best practices. The framework embeds strategies to guide teachers in designing the assessment and to prepare the students in undertaking the group work. At the core, the GAD framework emphasises on the constructive coherence between the three key areas of the curriculum: learning outcomes, assessments and learning activities. It provides a roadmap for a teacher in selecting a group task, designing the assessment with a set of learning activities and facilitating the group assessment with continuous monitoring and evaluation. The framework guides students through three distinct phases: Planning, Execution and Quality Assurance towards achieving the intended learning outcomes for the assessment. The authors have conducted an exploratory study to evaluate the perceived effectiveness of the GAD framework in developing a group assessment. The study shows that GAD framework provides both cooperative and collaborative learning environment for students which results in a positive group work experience. The study also revealed that overall satisfaction of the teachers facilitating the group work has improved with the adaption of the GAD framework.

Keywords: group work assessment, framework, learning outcomes, constructive alignment, collaborative learning, cooperative learning

1 INTRODUCTION

A learning environment that encourages student involvement in the discovery and sharing of knowledge through the learning activities and continuous assessments has been endorsed as an emerging trend in higher education. In this learner-centred approach, the role of a teacher has become more of a mentor or a guide who facilitates this dynamic process of learning. Nevertheless, the curriculum should be designed to support the active process of knowledge discovery and developing skills for future employability. In a recent survey report, Australian Association of Graduate Employers has rated teamwork in the top three skills required by Australian employers (AAGE 2014). Hence, graduate attributes developed by different professional associations include collaborative work and emphasizes on developing teamwork skills. One of the graduate attributes published by the Australian Computer Society is “learning and professional practice and in collaboration with others within broad parameters” (ACS 2015). The graduate attributes published by the Public Relations Institute of Australia includes collaboration and teamwork (PRIA 2019). Therefore, group work is unarguably one of the important assessment strategies for 21st century curriculum that prepare students for the future workforce.

Very often, group work assessments include authentic tasks that replicate work experiences in real-world settings. The authentic assessments help students to contextualise their learning and broaden their theoretical knowledge. Through group work, students gain both knowledge of the subject-matter and group skills such as effective communication, collaboration, project management, etc. Chiriac (2014) divides the learning in a group task into two categories: academic knowledge and group knowledge. Academic knowledge refers to learning subject-matter and group knowledge refers to learning group skills for working in a group. The author also differentiated the learning of each student from the perspective of their individual participation and contribution to the group work. Chiriac (2014) defines the learning as collaborative when the students interact with each other in accomplishing an activity, whereas cooperative learning refers to students work individually on separate parts of the group task.

The learning outcomes of a unit articulate the knowledge or skills that a student is expected to acquire on successful completion. In addition to academic knowledge, a unit may include a variety of learning outcomes focusing on graduate qualities such as leadership, teamwork, communication skill, etc. Therefore, a group assessment can be used to assess the learning outcomes focusing on group abilities or as the intended approach to assess the academic knowledge that the students acquire in a group (Chiriac 2014). Thus, group work assessments can increase the productivity and performance of individual students by deepening their understanding of the subject area.

Despite benefits, there are some challenges associated with group work. Some of these challenges are: the personality traits of the students (Pauli et al 2008), group dynamics (Cook and Matheson, 1997), group conflicts (Strauss and Alice 2007), free-riders (Ballantine and McCourt 2007), student’s inability to estimate the workload (Strauss and Alice,2007), facilitators’ lack of expertise in managing group work (Elliott and Higgins,2005) and difficulty in crediting individual achievements (Strauss and Alice,2007). Due to these challenges, group work assessment has been either discouraged or urged to have limited use in tertiary education. Plastow et. al. (2010) has recommended to diminish group work in their first-year level units and to award no more than 20% weighting for group assessments in the final year level units. However, considering the positive impact of incorporating group work into the curriculum, it is not always the best strategy to limit the weighting of group work assessments to lower percentages. Rather, thoughtfully developed group work assessments are one best approach for promoting student involvement in active learning and achieving intended learning outcomes.

Not every group assessment is similar in structure and duration. There are a variety of factors that characterise each assessment such as the level of study, the weighting of the assessments, number and type of learning outcomes assessed, the expected workload and the duration of the assessment task. Group work assessments can be challenging for students when the group assessment tasks are designed without paying careful attention to these factors. The key goal of designing an effective group work assessment should be to engage students with the task in an active learning manner to gain academic knowledge and create a positive learning environment for students to collaborate and gain group knowledge. In the literature, there are strategies proposed to address specific challenges associated with group work under certain conditions: e.g. best practices for cooperative learning (Johnson et. al. 1998), reflective learning logs for assessments with a long duration (Gillies & Boyle 2010). However, there are no holistic guidelines in the literature that a teacher can adopt to develop a group work assessment. In this paper, we have explored this gap by formulating the research question, “What is the holistic approach for developing an effective group work assessment that helps students to achieve the intended learning outcomes in a positive and collaborative learning environment?”. To address this research question, the authors have proposed the GAD framework that describes a comprehensive

roadmap for developing an effective group work assessment. The framework encompasses constructive alignment at its core and includes guidelines for selecting an authentic task, designing the assessment with a set of learning activities and facilitating the group work. It incorporates several best practices to address some of the key challenges of group work and allows the teacher to assess students' achievement in acquiring both academic and group-level learning outcomes individually and collaboratively.

The rest of the paper is organised as follows: Section 2 provides a literature review on group work assessments and strategies to solve issues followed by section 3 which discusses the key considerations that have been taken into account in the development of the proposed framework. Section 4 briefs the methodology used to develop the GAD framework. The GAD framework is presented in section 5. Section 6 details the exploratory case study on using the GAD framework to develop a group assessment followed by a detailed discussion on the effectiveness of the GAD framework in answering the research question in section 7. Section 8 concludes the paper with future work.

2 LITERATURE REVIEW

One of the main dilemmas that a teacher faces in group work assessments is how to manage free riders. Free riders are students assigned in the group who do not contribute at all or do not contribute to the level required to complete the assessment task (Mello, 1993; Noonan, 2013). On the other extreme, Salomon & Globerson (1989) identified the "sucker" phenomenon as a key challenge when one or a few group members taking the responsibility of all the work. Literature suggests measures such as small group size, assessed work to be an additive in nature (Stroebe et. al. 1996) and making individual contributions transparent. In general, learning logs and reflective learning can enhance learning (Galton et.al. 2009; Gillies and Boyle 2010). However, the learning logs demand extra effort for the students to complete and teachers to monitor in addition to the intended assessment task. The issues with free riding and sucker mentalities can also be attributed to group dynamics. Pauli et.al. (2008) studied the group work experiences of individual students and found that students in their second-year studies are less affected by group issues than in their first year. This observation implies that educating students regarding group dynamics as well as the importance and relevance of working in a team can help them to be better group members. Cook and Matheson (1997) suggested that students should learn group dynamics as a unit in their course curriculum. Clinbell and Stecher (2003) argued for a longer duration for group assessment and demonstrated that even 15 weeks is not long enough for group formation and have a meaningful attempt to complete the group work.

Johnson et. al. (1998) termed group work assessments as a formal cooperative learning process and identified five basic elements in cooperative learning. These are: positive interdependence, individual accountability, face-to-face peer interaction, interpersonal and small group skills and group processing. The first element, positive interdependence implies that group members need to work together to achieve the expected outcome. Having a mutual goal established by the teacher or a joint reward for working together can stimulate positive interdependence. To make each individual student accountable, the teacher should make each student feel responsible for their contribution. To facilitate monitoring and intervention, it is important to provide an opportunity for group interaction during the face-to-face class time. Face-to-face interaction helps students to learn from each other in a collaborative environment and receive feedback from the teacher. Johnson et. al. (1998) suggested the necessity of preparing students with group knowledge and skills to better manage group interactions and dynamics. The last element, group processing ensures each student receive feedback, analyse the group performance and celebrate group achievements.

Sharp (2006) proposed several guidelines on how to assess group assessment tasks for fairness and consistency. These are: (1) overall quality of work should be assessed by the teacher and percentage grade should be awarded based on that, (2) contribution of each student to group work should be assessed by students in the group, (3) students do not evaluate their own contribution; each student should evaluate others' contribution confidentially, and (4) a simple formula should be used to calculate each student's final grade. Croy (2018) reported that students prefer to have an individual standalone task such as reflections or an essay to be incorporated into a group work assessment with higher weighting instead of receiving marks only based on the group assessment task. Smith & Rogers (2014) also recommend using mixed mode of assessments (individual and collaborative) with low weighting for the collaborative group work assessment component.

3 KEY CONSIDERATIONS IN DESIGNING EFFECTIVE GROUP ASSESSMENTS

Biggs (2003) proposed the constructive alignment that requires coherence between three key areas of the curriculum: assessment, learning activities and learning outcomes. A constructively aligned unit has two aspects. The 'constructive' aspect refers to the idea that the learners learn the set learning outcomes by themselves through the given learning activities, whereas the 'alignment' aspect refers to the teacher's role in students' learning; that is, a teacher is expected to set up a series of learning activities and assessment activities to support students to learn and achieve the intended learning outcomes.

In tertiary education, the learning outcomes have become a bed-rock of the infrastructure that determines the quality assurance processes for a given unit (Scott 2011). Therefore, it is important to ensure that every learning activity is aligned with one or more learning outcomes and provide students with opportunities to develop and demonstrate their learning. Assessing students' level of achievement in acquiring those learning outcomes generally involves different types of assessments such as formal or informal, high or low-stakes, individual or group work.

Siddiqui (2017) described four essential attributes that define an effective assessment. These attributes are (1) communication between teacher and students regarding the expectations and requirements for assessment, (2) both teacher and students must be fully familiar with the assessment tools and grading criteria, (3) embedding assessment within the learning experience and (4) constant evaluation of the assessment. In the case of a group assessment, one other important attribute is that it should also provide fair opportunities for students to demonstrate their knowledge both individually and collaboratively. Furthermore, an effective group assessment should incorporate the best practices such as positive interdependence, interpersonal and small group skills, individual accountability, promoting peer interaction and group processing to make it a success. The following section denotes the theoretical rationale undertaken to solve the research question.

4 METHODOLOGY

Firstly, the authors reflected on their past experiences of over ten years in facilitating group assessment and used these observations in inductive reasoning to develop some parts of the GAD framework e.g. guidelines that facilitate the progression of the Project Execution phase. Later, Authors' experience of working through different phases of software development methodologies motivated them to design a set of learning activities as part of the Planning and Quality Assurance phase in the framework. Therefore, the framework has been constructed by blending the findings in academic research with the teamwork practices adopted in the industry. The framework, that was built to solve the research question can be considered as an artefact. Artefacts do not occur naturally (Simon 1996) and these are purposefully built to solve an organisational problem (Hevner et al 2004). Thereafter, an exploratory study was conducted to formulate the problem more precisely, to clarify the concepts, gather explanations, and to gain insights. Once the framework was constructed, it was implemented by modifying a pre-existing group work assessments task. The application of GAD framework to design an assessment task is explained in the case study presented in section 6. During this study, the positive aspects and the feasibility of the framework were briefly investigated.

5 GAD FRAMEWORK

The main challenge of a group assessment is to ensure that it provides a positive and effective collaborative learning experience for the students. Despite the challenges, the authors believe that careful planning and appropriate level of monitoring can mitigate the challenges associated with group assessment. To make group assessments a success, the task needs to be thoughtfully selected, designed and implemented, so that it prepares students with both academic and group skills. The proposed framework as shown in Figure 1 provides a roadmap for selecting, designing and implementing a group assessment. It provides a set of guidelines for choosing a task and then designing the assessment with a set of learning activities so that both student and teacher have their designated roles and are prepared for undertaking the group work. The framework emphasizes on two key roles in the implementation of the group assessment: teacher and student. The role of students spans over three distinct phases. These phases are: Planning, Project Execution and Quality Assurance. In two of these phases, Planning and Quality Assurance, the students are required to collaborate and contribute towards achieving a shared goal. The second phase is the Project Execution phase where each student works on an individual subproject to demonstrate their perceived academic knowledge and skills that are mapped to the learning outcomes covered in the assessment. During the Planning phase, students complete a set of

learning activities to get prepared for the group task and produce a detail project plan entailing a list of tasks, person allocated to and tentative completion time. During the Quality Assurance phase, the group members work collaboratively on a set of group activities which require them to verify their completed task against a set of given criteria. The role of the teacher is to select an appropriate task, design the assessment and provide continuous monitoring and supervision as the students go through the different phases of the GAD framework.

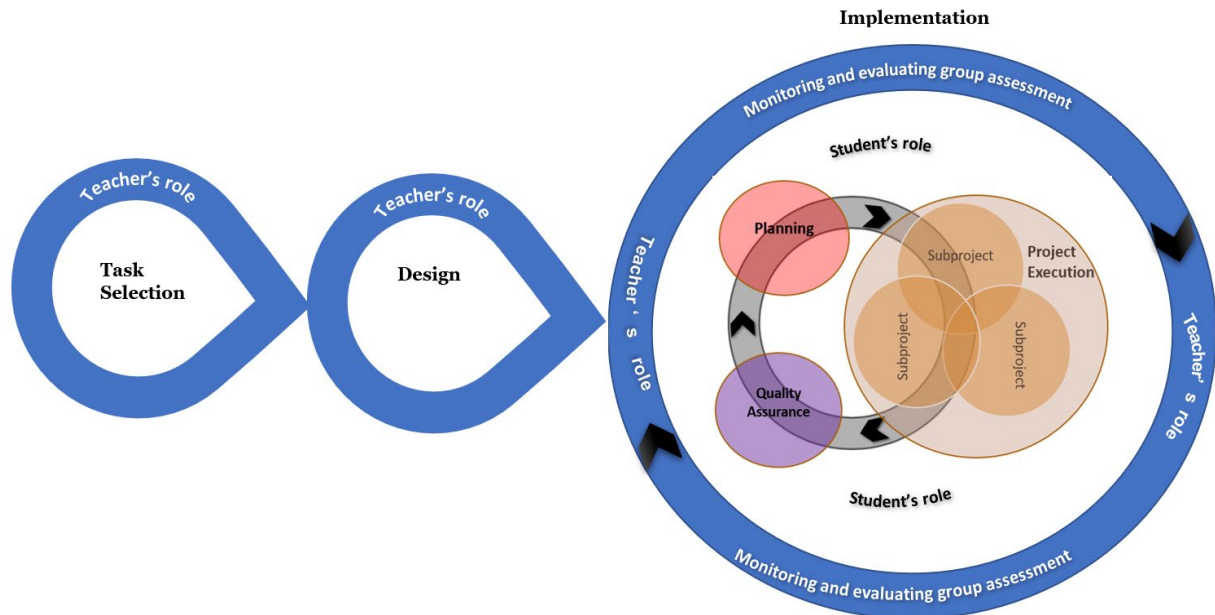


Figure 1: GAD framework: A framework for developing effective group work assessment

5.1 Selecting tasks for group assessment

The focus of this phase is to choose an authentic task that focuses on applying knowledge and skills in real-life settings. By anchoring assessment to real-life situations, students are more likely to understand the importance of the task and be motivated to undertake the assessment. It also makes assessment tasks worthwhile learning experiences for the students. In addition to selecting an authentic task, the framework also advocates that if possible, a teacher should follow below guidelines in selecting the group task. The following guidelines facilitate the progression of the Project execution phase when students undertake the group work. The guidelines are:

- i. The task should be dividable into interdependent subprojects as shown in Project Execution phase of the GAD framework. The subprojects and interdependency between them are subjective to the area of study. For instance, in a software development project, the subprojects can be considered as subsystems and interdependence is having overlapping functionality and users among these subsystems.
- ii. Each of these subprojects should include activities that align with the learning outcomes focusing on the academic knowledge and skills of the assessment.
- iii. Each subproject should be allocated to an individual member of the group.
- iv. Though the subprojects are interdependent, students can work on their allocated subprojects in parallel with reasonable collaboration.
- v. The solution to each subproject must be easy to integrate and the combined solution is a valid answer to the whole project.

5.2 Designing the group assessment

In designing the group assessment, the roles of a teacher and students need to be carefully considered and specified. The teacher should design activities that enforces the students to go through the three phases: Planning, Project Execution and Quality Assurance and also guides teachers on how to provide continuous monitoring, supervision and evaluation of the group work. A group assessment requires the teacher's direct intervention on setting guidelines on issues such as group formation, group size, preparing students for group work and effective ways of supporting the group as well as individual members. While designing the assessment, the teacher must consider setting up learning activities that

are aligned with the learning outcomes. These activities prepare and guide students for undertaking the group work and achieving the intended group level learning outcomes. Table 2 presents some common group level learning outcomes and suggested in-class learning activities.

Learning Outcomes	Suggested learning activities
Interpersonal and small group skill	Reading activities on effective group work. Class activities where students are asked to perform SWOT (Strength, Weakness, Opportunity and Threat) analysis of each member and the group. The objective of the SWOT analysis is to identify the strengths of individual members and employ those skills effectively in group activities. It also helps to identify how to minimise the weaknesses of individual members.
Group processing	Regular in-class stand-up meetings to promote the group dynamics where students are expected to record and discuss their individual/group progress in the meeting and document the meeting minutes.
Positive Interdependence	Regular in-class learning activities that provide the opportunity for students to discuss and define the scope of each subproject. During in-class sessions, students can also work on the interdependent parts of the project and receive feedback and support from the teacher and other group members.
Promote Peer Interaction	Collaborative in-class activities promote face-to-face interactions. Groups can be also created on the learning management system (e.g. Blackboard) to enhance peer interaction and management of shared work within groups.

Table 1: suggested learning activities to achieve common group level learning outcomes

Quality Assurance is an important step towards producing a quality product. The framework advocates each group to check their completed work against the assessment tool and the grading criteria. While designing the group assessment, the teacher should set up learning activities so that it enforces the students to check and verify their work in class.

The other important consideration during designing the assessment is how to monitor the group progress and evaluate the group work. Regular in-class stand-up meetings and documenting progress are some promising measures in monitoring group progress. Some example of documentation may include taking meeting minutes, creating an action plan, recording the progress against the action plan etc. One of the most important tasks in the Design phase for the teacher is to provide the templates for such documentation.

One final consideration advocated by the framework is how to evaluate group assessment. Mellor (2012) argued that group assessments need to be assessed by using several low-stakes linked tasks over multiple iterations. Two tasks are considered to be linked if there is a dependency between them. The benefit of linked assessment tasks is that the feedback received on an earlier task can help students to understand and complete the later task successfully. The number of iterations required to accomplish a group work is determined by several factors such as scope, duration, weighting and complexity of the task. Scope refers to the contribution of the group assessment to the overall unit. For example, some group assessments can assess just a fraction of the total learning outcomes of a unit whereas others can assess majority of the learning outcomes in group. Duration can be defined by the number of hours in a standard semester a student works on the assessment. Weighting is the numerical measurement of the impact factor of the assessment to the unit. A complex group assessment demands a number of low-stakes linked assessment tasks spread throughout the duration of the assessment to reduce risks such as distractions, inability of students to assess the workload, etc.

Each phase of the framework, that students go through, can also result in multiple assessment iterations depending on the chosen group task. For example, on completing the Planning phase, the teacher may assess students' understanding of the task in an oral presentation. A formative feedback from the teacher can help students either to build their confidence for the next phase or to correct their mistake in the previous phase. A range of assessment methods can be used in different iterations such as weekly class work, oral presentation, online quizzes, written report etc. The use of different types of tasks in various iterations caters to diverse learning styles and preferences of individual students within the group. Nevertheless, the teacher should determine the number of iterations, deliverables for each iteration, assessment type, grading criteria and assessment rubrics while designing the assessment.

5.3 Implementing the group assessment

Both teacher and students should play active roles in implementing the group assessment. The students go through the three distinct phases: Planning, Project Execution and Quality Assurance as suggested by the framework and the teacher's role is to monitor the group progress and evaluate the group work.

5.3.1 Planning

Planning group work is an important first step towards making group work a success. This phase commences with a set of in-class activities such as SWOT analysis which students completes as a preparation for the group assessment. This helps them to understand the group dynamics and employ it effectively in accomplishing the task. Next, students discuss the task in groups and get familiar with the assessment task to prepare a detailed project plan with tentative completion time. This requires them to divide the task into manageable subprojects, prioritise the subprojects and allocate them to individual members. For instance, in a software development project, the whole system can be divided into several subsystems and components. Each subsystem/component can be prioritized according to stakeholder's requirements and allocated to different student. The Planning phase also involves scheduling group meetings in a regular manner. This helps groups to monitor the progress and set action plan accordingly. During Planning phase, students work in collaboration and achieve learning outcomes related to group knowledge. The teacher provides support and feedback with the aim of developing a functional group.

5.3.2 Project Execution

During Project Execution phase, each group member works on their allocated subprojects and demonstrates their academic knowledge and skills. The phase requires students to cooperate and collaborate in accomplishing their allocated tasks. Since the subprojects are interdependent as shown in Figure 1, students can work on the independent activities of the subproject individually; however, they need to collaborate in accomplishing the interdependent activities.

The benefit of the Project Execution phase is twofold: (i) the allocation of subprojects to individual students allows the teacher to identify the free riders and assess individual student's effort and achievement in accomplishing the group work. It can also help a contributing member to be shielded as the project progress is transparent. (ii)The amount of cooperation and collaboration required in completing the interdependent subprojects helps the teachers to assess the learning outcomes related to both academic and group knowledge.

5.3.3 Quality Assurance

During the third phase, students take on roles and responsibilities to critically examine their completed work against a set of given criteria. This phase is accomplished with different types of in-class learning activities such as peer evaluation under the guidance of a teacher. This allows students to identify their own mistakes and develop deep learning of the subject matter.

The roles and the responsibilities involved in Quality Assurance are subject to the content of the assessment task, whereas the criteria are deduced from the learning outcomes to be achieved through the group work. For instance, in a software development project, students can play industry-standard roles such as Business Analyst, Quality Assurance Manager, Project Manager and adapt their respective responsibilities in a simplified form. Playing industry-standard roles helps student to get familiar with their future career as well as being engaged with the class activity.

The key benefit of the Quality Assurance phase is that it promotes face to face peer interaction and hence, improves group dynamics. This phase also enhances communication between teacher and students regarding the expectations and requirements for the assessment. The other benefit of the phase is that students develop a solid understanding of the assessment tools and grading criteria over time.

5.3.4 Monitoring and Evaluating Group Work

One important attribute of an effective group assessment is to ensure continuous monitoring of the group progress and evaluation of the completed work by the teacher. Conducting regular in-class stand-up meetings is a recommended exercise for monitoring the functionality and the progress of a group. During these meeting, students discuss their progress, challenges and prepare action plan for the next week. To encourage active participation, a small fraction of the assessment mark can be awarded for attending and documenting the weekly meetings.

The framework advocates group assessments to be assessed by using a number of low-stakes linked tasks over multiple iterations. The teacher's role is to communicate the expectations and requirements for

each iteration and provide grading criteria. The teacher should provide formative feedback on completed work so that students build up confidence as they progress through the later iterations.

6 CASE STUDY: APPLICATION OF GAD FRAMEWORK

The exploratory case study focuses on a group assessment task, namely Applied project in a first-year level university unit at the author's organisation, Object Oriented Analysis (OOA). Table 2 summarises the key factors that characterizes this assessment task. Out of the 11 learning outcomes to achieve in this unit, 10 are predominantly assessed in this major assessment. Nevertheless, the weighting and duration of the task also establish it as an important assessment in the unit. The weekly learning activities have been designed to progress the students through the three phases and also to monitor the progress.

Key factors	Value
Learning outcomes assessed	10 out of 11 (91%)
Weighting	25%
Duration	10 of 12 weeks/semester

Table 2: Key factors characterising the Applied project

The primary objective of the Applied project is to experience the early phases of software development methodology. In developing the Applied Project, we have used an industry-standard case study following the guidelines for task selection. Then, we designed a set of learning activities as suggested in Table 1. The group formation, group preparation tasks such as designated readings for group work, SWOT analysis etc. and Planning phase activities were scheduled to be completed in the first few weeks of the semester. The students were allowed to self-select into groups of maximum 4 members. Regular in-class group meetings have been encouraged by rewarding small fraction of 10% participation marks in the unit and supplemented with templates to document group progress. The weekly learning activities for the two-hour practical class have been designed in a way that students can both cooperate and collaborate within the group as they go through the three phases of the proposed framework. The assessment focuses on documenting functional and non-functional requirements of a software system to match the scope of the learning outcomes of the unit. Monitoring and ongoing evaluation is provided through three different iterations that students needed to submit. The deliverables, the assessment method and the grading scheme for each iteration were determined and documented during the design phase.

The type of assessment used in Iteration 1 is an oral presentation weighting 5%. The deliverables for this iteration are the outcomes of the Planning phase including identification of subsystems and a draft project plan. Students receive formative feedback on their effort in identifying subsystems and on the draft project plan. The second iteration, Iteration 2 weighs 13% and requires students to submit a written report documenting the functional requirements for the software system. During this iteration, students cooperate and collaborate to accomplish the interdependent subsystems and utilize feedback received from Iteration 1. Students submit the complete written report including both functional and non-functional requirements for the software system in the final iteration which weighs 7%. The formal feedback received in Iteration 2 helps students to reflect and refine a quality report for iteration 3.

During this exploratory study, students' feedback was collected through a survey including several questions to reflect on the group level learning outcomes such as interpersonal and small group skill, group processing, positive interdependence and promoting peer interaction. An initial analysis of the collected data showed that students strongly agreed that getting an opportunity to effectively communicate, build trust and to resolve conflicts helped them to build group dynamics. Students also strongly agreed that regular weekly group meetings greatly helped them to have visibility to group progress. Accomplishing the subprojects with overlapping functionality helped students to collaborate effectively and positively to achieve the common goal.

Teacher's reflection on conducting the group work was also analysed during our exploratory study. The teachers agreed that the framework guided them to design the assessment thoroughly and prepare students for the group assessment. Assigning each subproject to individual members has enhanced individual accountability and helped students to achieve academic level learning outcomes. Overall, teacher's satisfaction of facilitating the group work has improved with the adaption of the framework.

The findings of our exploratory study show that the GAD framework provided a roadmap for the teacher to select and design, monitor and evaluate a group work assessment. It also prepares students in building group dynamics and guide them in undertaking the group assessment in a cooperative and collaborative environment.

7 Discussion

The framework has been devised with the intention of developing an effective group work assessment that helps students to achieve the intended learning outcomes in a positive and collaborative learning environment. This section rationalizes that the proposed artefact is useful in fulfilling the intended use it was constructed for. The proposed GAD framework emphasises on four different aspects: 1) the constructive coherence among the intended learning outcomes, learning activities and the assessments, 2) exhibits the attributes of an effective assessment, 3) incorporates the best practices of cooperative learning and 4) an authentic assessment.

As Biggs (2003) suggests, with constructive alignment in place, the students should complete the learning activities to learn the intended learning outcomes and demonstrate their acquired knowledge in accomplishing the assessments. The GAD framework provides the guidelines to design a set of in-class learning activities as a means of preparing the students to undertake the group work. The purpose of these learning activities is to learn group knowledge and skills to better manage group interactions and dynamics as suggested in Johnson et. al. (1998). The framework also encourages teachers to design learning activities targeting the academic level learning outcomes so that students enhance their learning through positive collaboration and cooperation in class environment. Therefore, the framework authorises a very little flexibility and students are in a sense “trapped”, with the only way out is by learning what the student is intended to learn Biggs (2003).

The GAD framework incorporates the four attributes that Siddiqui (2017) prescribed as essential for an effective assessment. During Implementation, the teacher is constantly communicating with the students to familiarise themselves with the assessment as a whole, how it is structured, its divisions, the tasks both at group level and individual level, what students’ own competencies are, how the eLearning platform can assist in group work, what level of collaboration is needed and how to progress, etc. This constant communication regarding expectations and requirements of the assessment is one of four essential attributes of an effective assessment (Siddiqui,2017). Further, the teacher’s presence in the class plays an active role in clarifying doubts and sharing experiences and theoretical knowledge with the students. The learning activities, such as detail project planning during the Planning phase gives students a much deeper understanding of the assessment, the constituent tasks and estimation of the workload. During Quality Assurance phase, students takes on roles and responsibilities to critically examine their completed work against a set of given criteria. This helps students to be fully aware of the grading criteria and the assessment tools. Therefore, the GAD framework ensures that it incorporates the second attribute of an effective assessment as recommended in Siddiqui (2017). Constructive alignment of three elements: assessments, learning activities and learning outcomes embed the assessment within the learning experience. Siddiqui (2017) identified constant evaluation as the last attribute of an effective assessment. Since GAD advocates a number of low-stakes linked tasks as the evaluation procedure, the teacher can provide formative and summative feedback for each iteration. Students also receive formative feedback for in-class activities and can apply the received feedback to understand and improve the later tasks. During Project Execution phase, each group member works on their allocated subprojects individually. Since the subprojects are interdependent, they need to collaborate in accomplishing those interdependent activities. Therefore, the proposed GAD framework promotes cooperation and collaboration which is an important attribute for a group assessment.

Johnson et. al. (1998) recommended basic elements such as face-to-face interaction, interpersonal and group skills, group processing as best practices for cooperative learning. The GAD framework ensures that students exercise these best practices as they go through different phases in the Implementation. During the Planning phase, students prepare a detailed plan for accomplishing the group work and schedule regular in-class group meetings. In each meeting, students are asked to document their group progress and action plan until the next meeting as class activities. These meetings encourage face-to-face interaction and promotes group processing. Monitoring progress in a regular interval also helps students and teachers to resolve any issues within the group such as group conflicts, free-riders, students’ inability to estimate workload etc. Nevertheless, learning activities such as SWOT analysis help students to manage their group better and promote group dynamics.

Authentic assessment has its’ focus on getting the students to use and apply knowledge in real-life settings while peer collaboration promotes engagement and open conversation (UNSW 2018). Students generally accept authentic assessments as it motivates them to become more productive learners and have a deeper engagement with the assessment. During the Project Execution phase, having their own subproject yet being a part of a bigger project gives the students the opportunity to apply their academic knowledge and achieve the intended learning outcomes of the assessment.

Furthermore, the GAD framework provides a roadmap for a teacher, experienced or inexperienced, on how to select a group task, design the assessment as well as monitor and evaluate the students while undertaking the group work while providing definite guidelines for the student to complete the group assessment. Hence, GAD framework provides a holistic approach to developing an effective group assessment.

8 CONCLUSION

Group work is an essential learning tool used at all levels in educational systems. The benefits and challenges of having students learning and working in groups are well studied in the literature. The question of why some group work is successful and others result in negative experience for both students and teachers is yet to be solved. Nevertheless, studies have identified that lack of positive collaboration and cooperation between the group members is a key challenge. This paper proposes GAD, a framework that provides a comprehensive roadmap for developing an effective group work assessment. The framework encompasses constructive alignment at its core and includes guidelines for a teacher in selecting an authentic task, designing the assessment with a set of learning activities and facilitating the group work. It also embeds strategies for preparing groups for undertaking the group work and guides each group member to collaborate and cooperate towards successful completion. The authors conducted an exploratory study in their institute to examine the effectiveness of the framework. The initial finding confirms that both students and teachers acknowledged positively in adapting GAD framework in their group task. However, the teachers also reflected that selecting an authentic task that is dividable into interdependent subtasks is subjective to the discipline and the subtasks that can be worked in parallel may not be always plausible. The authors aim to explore these challenges by conducting a descriptive study across different disciplines.

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