Peer Marking In Moodle

Hanqing Zhao

U5542333

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Except where otherwise indicated, this thesis is my own original work.

Hanqing Zhao
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A special gratitude I give to my supervisor, Sabrina Caldwell, whose contribution in stimulating suggestions and encouragement, helped me to coordinate my project especially in writing this report. Sabrina played an indispensable role in helping me to figure out each step in the complex peer assessment process in COMP1710 and its purpose, which is crucial to my research on peer assessment in higher education.

A special thanks goes to the course convenor, Weifa Liang, who gave me many helpful suggestions on the presentation, slides and the report writing.
Abstract

This paper investigates assessment methods in higher education, analyses the assessment methods used in COMP1710, summarizes the benefits and limitations of assessment and mark calculation in COMP1710, discusses what can be achieved to improve teaching method and peer assessment in COMP1710 and describes the software that I made to simplify the manual work in this process.

Formative assessment such as giving feedbacks and marks to students is the main assessment method in higher education. However, the analysis reveals two drawbacks of formative assessment including its exclusiveness and difficulty of enforcing. Thus, to solve this problem, summative assessment can be applied in higher education to provide students an easier way to set goals and track their own progress in their study life. COMP1710, an important compulsory course in Australia National University(ANU) combined these two assessment methods and used it in the teaching process. The main method in COMP1710 to assess students is doing peer evaluation via rubrics, that is, let students to mark their peers’ work and then they will be marked according to their evaluation of their peers. It takes the lecturer and tutors a lot of time to make spreadsheets and calculate their marks since they need to make a specific marking spreadsheet for each student before sending it to them and getting their marking for other students. In this project, the automation of generating spreadsheets and analysing marks have been done to help the teaching process in COMP1710, which can save the processing time and the waste of human cost. In addition, this will contribute to a quick delivery of marks and feedbacks to the students to help them make further progress in their subsequent study.
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Chapter 1

1 Introduction

1.1 Overview

These days, students want clear guidance and direction to their marks in the course such as how their work is being graded and what the assessment item is asking for (Boud D, Cohen R, & Sampson J 2014). Consequently, there is an increasingly urgent demand on the course convener to engage with various different methods of assessment and to enhance the analysis of feedback from students. In order to achieve this in COMP1710, formative assessment and summative assessment are combined in this course to assess students. By doing this, it seems more reasonable to expect a better performance in subsequent student work and see progressive competence development of students’ behavior.

The tool that we use in COMP1710 peer evaluation is an Excel spreadsheet or rubric. The rubric is a grading tool that is supposed to communicate the expectation of the assessment items and used as constructive feedback for the student to learn more and make progress with the learning outcomes obtained from the assessment items. To maximize the outcome students get from the rubrics and make the assessment tasks more clear to students, the performance levels description on rubric must be clearly differentiated. Hence the description of these levels needs to be clearly defined and logically sequenced. It should promote recognition of varying levels of performance and encouraging the student to improve and drive own learning to increase their knowledge. However, to design an effective rubric requires time and revaluation after each usage. Each rubric should be designed individually to reflect the assessment activity since if we don’t do so, the students may find a fixed pattern of the peer assessment and cheat on that, for example, they may find that the first report is always the best one and last report is always the worst one.

Therefore, some tools can be implemented to help save human cost and time of this process. For example, the automation tools that can automatically generate the excel spreadsheets for each student with a unique permutation of embedded other students’ work and a COMP1710 Automation System that can automatically detect and report the big gap between student’s marks and expert marks. The outcome for this project can be divided into two aspects. For teaching staff, that will extricate the teaching staff from doing all of these things manually and gain more time to focus on students demands, solve students’ problems and questions. For students, they will get their feedback in a shorter time, which make it easier for them to make progress in their subsequent academic performance.
However, there are some limitations about the peer assessment process and the software that I made. To solve the above problems and better improve the peer assessment process in COMP1710, the potential future step includes

- Do a deep research on the higher education to modify the workflow of the peer assessment in COMP1710
- Construct an Email Distribution and Collection system.
- Achieve the automatic downloads of students’ reports from Wattle.
- Construct a more flexible Moodle platform for COMP1710 to take place of Wattle.
1.2 Document Outline

The document below records the overall research, analysis, implementation, outcome and limitations of a series of tasks undertaken to investigate the importance of peer assessment in higher education and how it can be improved. The chapters of the document are as follows:

Chapter 1: Introduction
   Chapter One provides an introduction to the report, overview of the paper content and the document outline.

Chapter 2: Background and Literature Review
   Chapter Two provides background knowledge to the project and contains a literature research about peer assessment in higher education.

Chapter 3: Peer Assessment Methods in COMP1710
   Chapter Three provides the research of how COMP1710 helps students to prepare to write their own reports, how it assesses students’ reports by peer evaluation and how it calculates and analyses students’ mark.

Chapter 4: Results
   Chapter Four describes to what extent the peer assessment in COMP1710 can be enhanced and the software that I made to improve the efficiency of this process.

Chapter 5: Limitation and Future Step
   Chapter Five provides the limitations of the peer marking process and the software I made, it also describes the future step that can be taken to solve the limitations and extend the project.

Chapter 6: Conclusion
   Chapter Six summarises the results and analyses of the project, as well as the main contribution it has made.
2 Background and Literature Review

2.1 Formative assessment

Over the last two decades, the way lecturers and tutors mark students in higher education has changed. In the past, students mainly relied on lecturer’s transmission to acquire knowledge. Nowadays, lecturers tend to involve students in constructing their own understanding and applying their skills to study actively. The traditional way of teaching, which is known as “formative assessment”, is still the most popular way to mark students. The purpose of formative assessment is to monitor students’ study, give them feedbacks that can be used to improve their learning methods and identify the areas that they need to learn more to make progress in their study (Karaca 2009). Generally, formative assessment is the process that the lecturers and tutors help students to analyse their strengths and weaknesses in their academic work, what they have done well and what they need to spend more time on in their previous study.

However, the potential problems that can be caused by applying formative assessment can not be ignored. Firstly, lecturers and tutors play an indispensable part in student’s study life, which does not serve a valuable function in helping students to develop self-regulation skills (Sadler, 1989). If the assessment is always occupied by the lecturers and tutors exclusively, students will never get themselves ready for learning after graduation and throughout life. Secondly, it is widely acknowledged that some feedbacks for students are invariably difficult to understand. Specifically, before the feedbacks can play a positive role in regulating students’ performance, students have to take measures actively (e.g. make a discussion) to understand the feedbacks. In most case, students are more likely to ignore the feedbacks due to its complexity. Therefore, summative assessment can be established to solve this problem.

2.2 Summative assessment

Summative assessment refers to marking the study of students by comparing it with some standards and it is usually scheduled at the end of a course or a leaning unit. This type of evaluation is supposed to measure how well the students master and satisfy the marking standards in their work. In this way, students can easily understand their performance in their academic work by checking the score they got for each item in the marking standards. In other words, summative assessments emphasize giving a specific grade according to standards while formative assessments
focus on giving feedbacks. The table below shows the examples in formative assessment and summative assessment respectively (Harlen & James 1997).

Table 2.2 The comparison between formative assessment and summative assessment

<table>
<thead>
<tr>
<th>Formative assessment</th>
<th>Summative assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>• make diagram to show the understanding of one topic</td>
<td>• a final / midterm exam</td>
</tr>
<tr>
<td>• submit several sentences identifying the main idea of a paragraph</td>
<td>• a project</td>
</tr>
<tr>
<td>• submit draft for early feedback</td>
<td>• a paper/ report/ essay/ case study</td>
</tr>
<tr>
<td></td>
<td>• a senior recital</td>
</tr>
</tbody>
</table>

Obviously, peer assessment is one reflection of summative assessment. By doing peer assessment, students are supposed to be responsible for marking the work of their peers against the assessment criteria. In this way, students are engaged in being an assessor by giving their peers feedback, which leads to a better understanding of assessment criteria (Kane & Lawler, 1978). Also, peer assessment will stimulate students’ motivation and encourage students to build up deep leaning, because when they are marking others’ work, for each assessment item, they will have an insight into their own understanding in comparison to others’ thoughts. Thus, peer assessment contributes a lot to students’ learning, which is one of the most important reasons why peer assessment is used in COMP1710.

2.3 Moodle in higher education

Moodle is a kind of course management system and the one that used in COMP1710 teaching is called “Wattle” in ANU. According to Cole and Foster (2007), course management systems are web applications, which can be run on a server and accessed by using a web browser. Both the teaching and the students can use the wattle with Internet access. Generally, Moodle provides educators with tools to create a course website with access control so that only students who enrolled in this course can view the course content in Moodle. There are many features that makes Moodle useful, it allows you to upload and share materials online, gives you forums for chatting, generates online quiz, records grades of students, releases and gathers assignments.

The main reason why Moodle is really helpful in higher education is that students want to download their course materials off the Web. With Moodle, they can access the update and information of the course at any time and download as many copies of the files that they need (Dougiamas & Taylor, 2003). Moodle can help the educators to make their class more efficient and effective, for example, if the lecturers move the content in class to an online document and ask students to learn that by themselves before the class, then lecturers can ask students what they did not understand during the lecture time.
Chapter 3

3 Peer Assessment Methods in COMP1710

COMP1710 Web Development and Design is an important compulsory course for Australia National University (ANU) Computer Science students, which introduces the construction of web sites and web interface/interaction design. Student can take the course any time during their studying in ANU since it is not a strong prerequisite for other computing courses.

In the assessment of this course, the combination of formative assessment and summative assessment has been applied to the marking of this course. That is, we combine both formative assessment and summative assessment while marking the students. Specifically, in our approach, formative marks can only make a student pass the course while deep learning marks will be added to the formative marks to help a student achieve a higher score (S.B. Caldwell & T.D. Gedeon, 2015). To earn such extra marks, students need to show an excellent performance in the whole course. The formative part and summative part in the assessment system of COMP1710 refers to quiz on report writing and report specifications respectively.

3.1 Formative assessment in COMP1710 – quiz on report writing

The table 3.1 below summarized the whole process of report writing quiz.

<table>
<thead>
<tr>
<th></th>
<th>Who</th>
<th>When</th>
<th>Task</th>
<th>How</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Students</td>
<td>Wk. 8-9</td>
<td>Do a training quiz on assessing reports - includes question &quot;Mark a report structure&quot; to which students respond with a written response of 2-3 paragraphs on average.</td>
<td>Wattle 'Report writing' quiz</td>
</tr>
<tr>
<td>2</td>
<td>Tom/Sabrina</td>
<td>Wk8-9</td>
<td>Review &quot;Mark a report structure&quot; answers and give feedback on why they got the mark they did (what was missing, what was off topic, etc.)</td>
<td>Wattle work</td>
</tr>
<tr>
<td>3</td>
<td>Students</td>
<td>Wk9-10</td>
<td>Revise their &quot;Mark a report structure&quot; question AND answer a new question &quot;mark the reflection on experiment participation component&quot;</td>
<td>Revisit this question in Wattle 'Report writing' quiz</td>
</tr>
<tr>
<td>4</td>
<td>Tom/Sabrina</td>
<td>Wk9-10</td>
<td>Review revised &quot;Mark a report structure&quot; student answers and revise their mark AND review their &quot;mark the reflection on experiment participation component&quot; and give feedback on why they got the mark they did</td>
<td>Wattle work</td>
</tr>
</tbody>
</table>
Before the students start to assess others’ reports or writing their own reports, they will be given some practice and background knowledge about assessing reports. The formative quiz serves a positive function in helping students to enhance the skills of assessing reports and discover the mistakes in the reports that can be avoided since it gives students an opportunity to discuss usual components of academic reports, the use of images, charts, references in the reports. In addition, there are some additional formative quiz training. Students will also be given two final short essay questions related to report structure and reflection, which requires them to mark the paragraph or the report, then justify their answer with the official feedback and explanation given by the teacher.

3.2 Summative assessment in COMP1710 – report specifications

For the students who have a good performance in this course, they will be required to write their own reports with report specifications in week 12, which is proved to be a way of summative assessment described in chapter 2. Also, to make writing report easier for them, they will be given a similar report, but with different topics, so they can use the sample report as an example without directly copying it. The report specifications in COMP1710 is as follows:

The objective of the report is to demonstrate that you can think and write coherently on a topic cognate (related in nature) to the content of the course. Please see the report writing quiz in Moodle for more details on the structure and content of reports in general to understand what kinds of material each section could contain. The information in the quiz and on-line or in books about reports are just suggestions as far as this course is concerned.

This is the key explanation of how to structure and what we want in the report:

You will consider a primary experiment in which you participate*, and

• describe the background and overall purpose of the primary experiment, briefly,

• then describe your participation* as an experimental subject,

• then you consider the secondary experiment in which you participate* and briefly describe the differences, and

• describe your opinion of the relationship between HCl and Web design.

Figure 3.2 Report Specifications

3.3 Summative assessment in COMP1710 – peer assessment

While the students who have a good academic results (calculated based on the quiz and assignment results) in the course in COMP1710 are required to write their own report according to the specifications described in Figure 3.2, students who can only
achieve a pass in this course are supposed to do the peer evaluation. Table 3.3.1 shows the work flow of peer assessment:

<table>
<thead>
<tr>
<th>Who</th>
<th>Task</th>
<th>How</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Tom</td>
<td>Generate the list of students doing the peer marking according to the academic performance in this course (e.g. quiz and assignment marks)</td>
<td>Excel workbook</td>
</tr>
<tr>
<td>2 Tom</td>
<td>Review and pre-mark all the reports submitted, and divide all the reports into 5 levels according to their quality.</td>
<td>Wattle</td>
</tr>
<tr>
<td>3 Tom</td>
<td>Anonymize all the actual reports submitted</td>
<td>Manually</td>
</tr>
<tr>
<td>4 Tom/Sabrina</td>
<td>Create spreadsheets with assessment items and embedded students’ reports.</td>
<td>Excel workbook</td>
</tr>
<tr>
<td>5 Sabrina</td>
<td>Send the spreadsheets created to the students who are supposed to do peer evaluation in Tom’s list.</td>
<td>Email system</td>
</tr>
<tr>
<td>6 Tom/Sabrina</td>
<td>Collect all the spreadsheets students submitted in wattle</td>
<td>Wattle</td>
</tr>
<tr>
<td>7 Sabrina</td>
<td>Send reminders to students who haven’t done the peer assessment</td>
<td>Email system</td>
</tr>
<tr>
<td>8 Tom</td>
<td>Check whether every reports submitted is marked by at least two students, if not, re-create some spreadsheets to put those reports in and send them to some students who are in the group of writing reports, make sure that the students will not receive the spreadsheet that contains their own reports.</td>
<td>Manually</td>
</tr>
<tr>
<td>9 Sabrina</td>
<td>Extract Info from the students ‘mark</td>
<td></td>
</tr>
</tbody>
</table>

Table 3.3.1 Work flow of peer assessment in COMP1710

Students who are doing the peer assessment will receive a spreadsheet. The spreadsheet has 5 embedded anonymous students’ reports, students can read the reports and assess the reports by clicking the down arrow of assessment section 4.1, 4.2, 4.3, 4.4…In this way, students can mark the reports quickly with clear guidance.

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**Picture 3.3.2 The spreadsheets used in COMP1710 peer assessment**
The different levels of each assessment section is clearly described in the spreadsheet, take the assessment section “4.5 HCI and Web design” in the spreadsheet for an example, student can choose the right comment for the report in the drop down list. Picture 3.3.3 below shows all the comments of section 4.5 in the drop down list.

![Screen Shot 2015-06-04 at 9.36.35 PM.png](attachment:Screen_Shot_2015-06-04_at_9.36.35_PM.png)

**Picture 3.3.3 Comments of assessment section “HCI and Web design”**

Although it is very convenient for students to do the peer evaluation by just reading the reports and make judgements for each evaluation section, it is still a huge working process to the teaching staff since they should do a lot of work, as the table 3.1.1 shows.

### 3.4 Data analysis in COMP1710

In COMP1710, the top students who write reports are marked according to their reports by an expert marker while the group of students who do the peer evaluation are marked according to how well they marked their peers. The table shows how the peer assessment marks are calculated and analyzed in COMP1710 (S.B. Caldwell & T.D. Gedeon, 2015). The bottom seven lines from “Total” is directly from the spreadsheet. S mark and S rank is identical to the “Total” line while the D mark and D rank is the mark given by an expert marker.

Then, the squared difference between S mark and D mark, between S rank and D rank can be calculated. After that, the square differences of 5 reports are added together, for example, the 2 and 29.81 in table 2. The sum of SqErr mark and the sum of SqErr rank can now be used as two measures of the how well students marked their peers.
4 Results

This section describes the results of my research, which includes the drawbacks of current assessment method in COMP1710, how this process can be improved and the software I developed to simplify the manual part of the current peer assessment procedure.

4.1 The drawbacks of current assessment method in COMP1710

The dominate problem is that it takes a lot of work and time from the teaching staff to complete the whole process due to the following elements in this procedure:

- In order to divide reports into 5 different levels, lecturer and tutors have to mark all the reports to first.
- Create unique permutation of five reports for each students
- The reports in the spreadsheets have to be anonymized
- One report should be marked by two students

Some software or program can be implemented to overcome it and improve the peer marking process since the most steps in this approach is duplicate, for example, to create the spreadsheets, different five reports should be put in the same place in the spreadsheets over and over again.

4.2 How can it be improved

There are several ways to improve the above problems that may occur in the peer assessment procedure in COMP1710. My approach is to develop a “COMP1710 Automation System” which can help to simplify manual data analysis and the manual spreadsheets creation in this process. Generally, there are two tasks in developing the software.

4.2.1 Task 1 – Generation of Spreadsheet

First, for the waste of time and human cost, we can achieve generating the spreadsheets automatically. If the permutation of five reports remains same in all the spreadsheets, student may find a pattern and cheat on that, for example, the first report is always the best one, etc. Therefore, the key part of spreadsheets generation is to create a random permutation of five different reports in each spreadsheet. Picture 4.2.1 below shows all the PDF report names (e.g. TK2C is a report name) and their group after anonymization.
The colours represent the levels of the reports, we have five colours here since the reports have been divided into five levels according to their mark. We need to randomly choose one report from each colour, generate a permutation of the five reports selected and insert them into the Excel spreadsheets by hyperlink. In order to create the permutation randomly, I used Heap’s algorithm to generate all possible permutations of the five reports and randomly choose one. The Heap’s algorithm generates a new permutation from the old one by interchanging a single pair of elements while the other (N−2) elements are not disturbed. Picture 4.2.2 below shows how heap’s algorithm works and its pseudo code.

```
procedure generate(n : integer, A : array of any):
    if n = 1 then
        output(A)
    else
        for i := 0; i < n − 1; i := i + 1 do
            generate(n − 1, A)
        if n is even then
            swap(A[i], A[n−1])
        else
            swap(A[0], A[n−1])
        end if
    end for
    generate(n − 1, A)
end if
```

Then we need to generate the structure and appearance of the Excel workbook. To do that, I used Apache POI, which is a Java API for Microsoft Documents. With this automation tool, the lecturers and tutors can create all the peer assessment spreadsheets and send them to the students doing the peer evaluation as long as they receive the reports from the students writing the reports and divide them into five groups according to their mark, which saves a lots of manual work and time. The picture 4.2.2.1 and 4.2.2.2 below shows the spreadsheets generated automatically.

Picture 4.2.2.1 Names and groups of PDF reports after anonymity

The colours represent the levels of the reports, we have five colours here since the reports have been divided into five levels according to their mark. We need to randomly choose one report from each colour, generate a permutation of the five reports selected and insert them into the Excel spreadsheets by hyperlink. In order to create the permutation randomly, I used Heap’s algorithm to generate all possible permutations of the five reports and randomly choose one. The Heap’s algorithm generates a new permutation from the old one by interchanging a single pair of elements while the other (N−2) elements are not disturbed. Picture 4.2.2 below shows how heap’s algorithm works and its pseudo code.

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            generate(n − 1, A)
        if n is even then
            swap(A[i], A[n−1])
        else
            swap(A[0], A[n−1])
        end if
    end for
    generate(n − 1, A)
end if
```

Then we need to generate the structure and appearance of the Excel workbook. To do that, I used Apache POI, which is a Java API for Microsoft Documents. With this automation tool, the lecturers and tutors can create all the peer assessment spreadsheets and send them to the students doing the peer evaluation as long as they receive the reports from the students writing the reports and divide them into five groups according to their mark, which saves a lots of manual work and time. The picture 4.2.2.1 and 4.2.2.2 below shows the spreadsheets generated automatically.

There are two sheets in this generated Excel workbook, the student peer marking sheet allows students to give the report a comment of a certain level from the drop down list while the rubric sheet shows all the assessment sections and comments of different levels.
### Picture 4.2.2.1 StudentPeerMarking Sheet

1. **Structure Comments**
   - S1: Report structure contains all sections required, is in good English, cites references and use some visual content
   - S2: Report structure contains most of the sections required, is in acceptable English, either cites references or use visual content
   - S3: Report structure contains many of the sections required, is in mostly acceptable English, either cites references or use visual content
   - S4: Report structure is deficient and is missing many required sections, English is pretty bad or no references are cited
   - S5: Report structure is very deficient and is missing most of the required sections, English is bad, no references are cited

2. **Background Comments**
   - B1: A clear statement of purpose of the experiment, clearly in writer's own words
   - B2: A good statement of purpose with some minor problems or slightly unclear writing
   - B3: Writing shows some understanding, but the text description is more like a sequence talking about what was done
   - B4: The background section shows little understanding, the text is unclear and unlikely to be in their own words
   - B5: The background is unclear written, hard to understand and off topic

3. **Reflection Primary Experiment Comments**
   - R1: Wrote in the first person in their own words about what it was like to take part in the experience and could discuss
   - R2: Not perfect, either wrote in the third person, or was unclear how their experience related to the overall purpose
   - R3: Wrote in the third person, showed little reflection and was unclear about the purpose
   - R4: Worth some part marks

### Picture 4.2.2.2 Rubric Sheet
4.2.2 Task 2 – COMP1710 Automation System

To make marking easier to teaching staff, I developed a automation system for COMP1710 marking in java, which achieves following functions:

• Enter in the students’ information Students name and uniID to add student into the system, delete student or searching students’ mark / information by entering by their name or uniID
• Create different groups in COMP1710, such as peer evaluation group, report writing group and add students into different groups
• Enter marks for all students in a certain group.
• Calculate the average mark of a certain group and compare the results of two groups, calculate the SqErr mark and SqErr rank( described in chapter three, SqErr mark and SqErr rank are two measures of assessing students doing peer assessment) for each student doing the peer evaluation.
• Detect the huge gap between the student mark and expert mark and send notifications to the lecturers and tutors (In case the tutors put in the wrong expert mark or the expert mark is not reliable).
• Generate bat chart and pie chart for the mark distribution in each group.
• Save and export all the information entered and analyse generated in the automation system as a XX.ps file at anywhere in computer.
• Open the XX.ps file to import all the data and analyse you saved before.
• Quit the system at anytime.

All the functions above are necessary procedures in the marking process of COMP1710 can be used by the lecturers and tutors to simplify their work. The picture 4.2.3 below shows the testing of the ” COMP1710 Automation System” grade analyse part. The generation of this bar chart is tested on fake data.

![Picture 4.3.3 COMP1710 Automation System mark analysis](image-url)
5 Limitation and Future Step

5.1 Limitations

Generally, the peer assessment in COMP1710, where students assess their peers’ reports, can encourage students to take more responsibility for gaining knowledge. It also makes students to consider all the assessment item in the rubric while reading others’ work, thus it can help them to more effectively understand assessment criteria and academic standards. However, the peer assessment method has its own limitations, which may reduce its effects.

There are some limitations on the reliability and validity of peer assessment. The study of Topping (1996) shows that students may not have the ability to evaluate each other, sometimes they may not take it seriously, allowing some other elements to influence their marking such as relationship with classmates, etc. Besides, some students may not like doing peer assessment due to the possibility of being misunderstood and discriminated, especially when they actually did a very good job but received a low mark from their peers (Kaufman et al, 2000). Although the above weakness and limitations of peer assessment can be decreased by anonymity, tutor moderation and multiple assessors, which are exactly what we have done in COMP1710, these problems still exist since there will always be students who do not follow the assessment rules.

Limitations on this project / software includes:

- The data and feedback of using the “COMP1710 Automation System" can not be collected from the teaching staff at this moment because the peer assessment spreadsheets are given to the students at the end of this semester.
- Some reports can not be added into the spreadsheets by the automation system because its size is too large, which means it require some manual work to generate spreadsheets containing these large PDF files.
- The students’ uniID, name need to be entered into the automation system manually before the marks can be calculated and analysed.
- While putting in the comments into peer assessment spreadsheets via Java POI, there is a character limitation (255) on content on the dropdown list, the comments exceeds the limit so I use short symbols such as R1-R5 to represent
the five levels for certain assessment item and put all the comments that explain what R1-R5 means in a new work sheet called "Rubric"

5.2 Future Step

There are many potential future work that can be done to extend this project. In terms of the assessments and teaching in COMP1710, the design for teaching can be proved in the future. For example, an entry survey can be added to the course to investigate what students want to learn in this course. According to, if teachers does not know what the students want in this course, then there will be no such thing as teaching. Thus, before the lecturers write about the aim and learning outcome in the course page at the beginning of the semester, it is a good idea to ask students what they want to learn in this course. In addition, the proportion of team work assessment can be increased to provide students more opportunities of sharing their ideas and learning from others. When a group are doing a task or an assignment, they can finish it more quickly with higher efficiency than a single person (Topping 1998). Also, allowing students to work as a team not only contribute to showcase the various strengths of students, but also leads to the compensation of their weaker areas, which will make a more skilled and competitive study environment since students will use the opportunity of team work to improve themselves across the board (Cannon-Bowers & Salas, 1997).

As for the software aimed at improving the current peer assessment process in COMP1710, the following functions can be explored or implemented to help more about the automation:

- Construct an Email Distribution and Collection system to send and collect spreadsheets automatically and send notifications to student who didn’t submit their work after the due date.
- Achieve the automatic anonymity of students’ reports.
- Achieve the automatic downloads of students’ reports from Wattle.
- Construct a more flexible Moodle platform for COMP1710
Chapter 6 Conclusion

The aim of this project is to explore the assessment methods in higher education, analyse the current assessment process of COMP1710 and make the software that can simplify the manual part of the peer assessment process in COMP1710. There are two main contributions in this project.

Firstly, the current assessment methods in COMP1710 are summarised and its advantages and limitations are discussed in this project, which makes it easier to enhance the teaching methods in this course. Educators can improve the teaching process by going through the assessment work flow table in Chapter 3, find the steps that they can make modifications to overcome the limitations. For example, in order to stimulate students’ cooperation, it is a good idea to give students more opportunity to do teamwork while doing report writing quiz or writing report.

Secondly, “COMP11710 Automation System” is made to help to improve the efficiency of peer assessment process. Although the peer assessment process in COMP1710 is convenient for both students and lecturers, it needs too much manual work from the teaching staff. Thus, I made a software “COMP1710 Automation System” to achieve mark analysis and the automation of the peer assessment procedures in COMP1710, which has been used to generate the spreadsheets for students this year.

Due to the limited time, there are a lot of things that can be taken to extend this project. For example, the PHP programing part can be implemented to improve this peer assessment process, including “construct an email distribution and collection system to send notifications to students automatically” and “download the students reports from Wattle automatically”.

• Chapter 6
References


### INDEPENDENT STUDY CONTRACT

*Note: Enrolment is subject to approval by the projects co-ordinator*

**SECTION A (Students and Supervisors)**

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<tr>
<td>Surname</td>
<td>Zhao</td>
</tr>
<tr>
<td>First names</td>
<td>Hanqing</td>
</tr>
<tr>
<td>Project supervisor (may be external):</td>
<td>Tom Gedeon, Sabrina Caldwell</td>
</tr>
<tr>
<td>Course supervisor (a RSCS academic):</td>
<td></td>
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<td>Course code, title and unit:</td>
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<tr>
<td>Semester (S1, S2)</td>
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**Project Title:**

Peer Marking in Moodle

**Learning Objectives:**

- Experience with PHP programming
- Experience with constructing moodle module
- Experience with Testing/Evaluating software

**Project Description:**

- Literature research of peer marking in higher education
- Implement Moodle Modules to:
  - Generate suitable permutations of anonymised reports for distribution;
  - Automate generation of excel spreadsheets of anonymised reports;
  - To implement an email distribution and collection system;
  - To extract marks from the marked report spreadsheets; and
  - Collate results from multiple markers with alternative aggregation functions.
- Optional task extension task – automate anonymisation of reports
- Testing and analysis of modules
- Write report.

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*Form updated Jun-12*
### ASSESSMENT (as per course’s project rules web page, with the differences noted below):

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<th>Evaluated by:</th>
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<tr>
<td>Presentation:</td>
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<td>Weifa Liang</td>
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### MEETING DATES (IF KNOWN):
Weekly

### STUDENT DECLARATION: I agree to fulfil the above defined contract:

... Hangying Zhao ...

Signature: ___________________ Date: ________________

### SECTION B (Supervisor):

I am willing to supervise and support this project. I have checked the student's academic record and believe this student can complete the project.

... ___________________ ...29 Jan 16...

Signature: ___________________ Date: ________________

### REQUIRED DEPARTMENT RESOURCES:
Access to previous spreadsheets; Access to Wattle

### SECTION C (Course coordinator approval)

... ___________________ ...

Signature: ___________________ Date: ________________

### SECTION D (Projects coordinator approval)

... ___________________ ...

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*Form updated Jun-12*