

# **Software Engineering Group Project 20**

## **End of Project Report**

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Config Ref: EndOfProjectReportGroup20  
Date: 6th May 2020  
Version: 1.0  
Status: Release

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# 1. INTRODUCTION

## 1.1 Purpose of this Document

This document aims to provide a full in-depth report on the Group 20 Welsh Vocabulary Tutor project in order to enable the markers to evaluate the project.

## 1.2 Scope

This report will document individual members' performance as well as details on the finished product.

It would be beneficial if the reader has already read the documentation on the project, which consists of the Design Specification[\[1\]](#), UI specification[\[2\]](#), and Test specification[\[3\]](#).

## 1.3 Objectives

The objective of this document is to provide the reader with a good understanding of the process of the development of the product.

# 2. MANAGEMENT SUMMARY

## 2.1 Project status

### 2.1.1 Functional

The program passes all functional requirements stated in the requirements specification (SE.QA.CSRS) [\[5\]](#).

### 2.1.2 Non functional

As far as the group are concerned there are no non functional parts of the software.

There are however underlying issues see section [4.1.2](#) and [4.2.1](#).

## 2.2 Difficulties

Fortunately our group didn't face many major difficulties during the lifetime of the project. At the start of the project one of our group members, Angus, was really difficult to contact and mostly unavailable which meant our project leader at the time was setting them work that we never saw results for. This issue resolved itself when Andy (Project Manager) told us he'd unfortunately left the project.

Later in the project Kain became very busy with his part-time employment, this meant he couldn't contribute as much, he asked me (Oscar Pocock) to step in and cover him as project leader till he could find more time to work on the project. In the end this led to me becoming full time project leader. Luckily, because Kain acted quickly when he found out his employment would be taking up more time, we were able to accommodate and move the project forward without detriment.

The week I became project leader, Luke became unavailable due to personal reasons, this required everyone to step up as we were one developer down. People did step up but unfortunately, not enough to cover the work Luke would have done that week. Luke was also unavailable, for the same reason, for the first two days of ITW (Integration and Testing week). On the second day of ITW, Luke requested he be set work as he would work on it when he got back in the evening. He kept active when he could in the chat and managed to still help the group here and there. Once he returned late Tuesday evening he started working on what I assigned him to do that day.

The Computer Graphics and Games assignment deadline landed shortly after ITW, due to this Brad felt uncomfortable working as much as he was on the group work after ITW as he needed to be focusing on his assignment. As we still needed Brad for the reviews, he agreed to be available Monday morning for reviews.

while the rest of the group agreed to work on the documentation over the weekend so we could finish the project early and give Waylen and Brad more time on their assignment.

## 2.3 Team performance

Overall the team performed fairly well, we had a slow start, but soon enough we picked up the pace. We learned what people's strengths and weaknesses were in order to work with them in order to allow people to work to the best of their ability. A few members really struggled to be comfortable using git and would use alternatives like sharing files over email or Discord, Kain and myself heavily encouraged people to learn how to start using it before we got too far into the project. Unfortunately, some group members were still refrained from using git or were using it incorrectly late into the project. There have been a few hurdles and a few members needed some encouragement but towards the end of the project, where we worked a lot closer together, everyone was contributing equally and everyone was vital in bringing the project to the state it's in today.

# 3. HISTORICAL ACCOUNT

## 3.1 Kain Bryan-Jones [kab74]

At the very start of the project, I certainly fell behind on my role as project leader. I underestimated how much work the first few weeks were and, as a result, got off to a rough start. I made a promise to my teammates in a blog post named 'Picking Up The Pace' [4]. I said I would now try much harder and I believe, for the most part, I did keep that promise. Unfortunately, working part-time also had a negative effect on my performance, which I will discuss at the end of this section. I also stated that my kind of leadership would try a metaphorical 'open door' approach. This meant I didn't want to be the 'boss' of the team but rather the organiser, which a leader should be. It also meant that I was open to any honest criticism so if the team felt I was falling behind then hopefully weren't afraid to tell me.

Even with all this said, right from the get-go we had a massively dedicated and focussed team. I think what was important to start off with was to identify people's strengths and weaknesses. This way we could split the group to the appropriate tasks and work in our favour.

Luckily all of the group were familiar with Discord, which made it very easy to organize the project. We created text channels and voice channels for different purposes, for example, one text channel was solely dedicated to posting minutes to, another was dedicated to important notice, another for general chat. Splitting the discussion like this meant we had the resources available if a persona had an issue. It also meant the team was able to find the support they needed from the other members. Using Discord as our main centre of conversation certainly helped the project excel forward.

Oscar worked on the UI spec document [2], Henry and Waylen worked on the Test spec document [3] and the Design spec document [1] was a collective effort. I was also allocated to help Oscar with the UI spec document, but as I stated at the start of this section, my first weeks weren't my best efforts. However, my 'open door' idea meant that my teammates were honest with me and helped me to put my head down and perform better.

When it came to the reviewing stages of all these documents the team gave it their all. We agreed that reviewing the documents in person was much more effective than reviewing a VoIP service such as Discord. That way we would have less temptation to be distracted. We chose the Hugh Owen Library as the main rendezvous point. However, this became an issue when the COVID-19 pandemic caused the campus to be shut down and people were advised to stay indoors. However, we didn't let this stop us. We spent three and a half hours on the final review of the design spec ready for release.

The COVID-19 pandemic also led to other issues. For one of the first weeks of the lockdown, I fell ill with a flu and was unable to attend the meeting in person. I attended the meeting with a video call. However the COVID-19 pandemic seemed to get worse over a very short period of time. It was understandable that not only myself but my team were affected. I was called into to work for more hours at the start and had another assignment due. I said I would try two weeks to see if I could handle the team still but after two weeks I realised I hadn't the time to run the team anymore. I announced I would step down and that Oscar would take my place, but that I would still be an active part of the team and support Oscar as much as I could.

**Written by:** Kain Bryan-Jones [kab74]

### **3.2 Oscar Pocock [osp1]**

Kain stepped down as project leader on the 14th of April, after a discussion with the group I moved from dpt. project leader to project leader and Tom became the new dpt. project leader. A change in roles this late into the project was quite unusual but Kain believed it would be best for the group considering his circumstances. I had been leading the group for a couple of weeks prior to becoming project leader due to Kain's busy schedule therefore, the change of role wasn't too hard to get used to.

At this point we were halfway between just handing in the Design Spec [\[1\]](#) and starting 'Integration & Testing Week'. I quickly evaluated that the entire group had needed to have worked nearly double the amount they had been doing for us to be on schedule for 'Integration and Testing' week. At this rate we weren't going to be ready for ITW, so I worked out how much time and work everyone would be required to do in order to start to make up for the work we hadn't done.

The meeting following the role change I asked people to do a minimum of 6 hours of work for that week and laid out what needed to be done by integration week and what we would be doing during integration week. Luke created a template with the libraries that everyone needed as a foundation for the project. Everyone was tasked in continuing their work, at this point everyone was assigned to an individual page or main function of the software. Everything had to be independently functional and meet all the requirements before integration week.

At the end of the first week as project leader I could see that people were still only putting in a few hours a week for the project, I asked people to do between 6-10 hours the following week. At the end of that week only 3 members of the group had been able to achieve that, others simply hadn't finished their work. At this stage we had everyone working on one main function of the code each with the aim for it to be fully functional on it's own before the start of ITW. Fortunately everyone managed this, although Waylen was unable to push his code to git and couldn't access his hard drive due to technical difficulties. Waylen spent the first day of ITW rewriting his code and spent the following days integrating it into the project.

I created an internal deadline for ITW. Day 1 - integration, day 2 - testing, day 3 - code QA and consistency, day 4 - system testing, and day 5 - packaging software. This turned out to be an extremely unrealistic plan. I also created a document in order to keep tabs on what everyone was working on while I went to each team member to keep up to date on what they were doing. Our first day we spent integrating most of the code with the exception of the sharedcodecontroller, the study page, and the add word page. There were a few issues caused by people not doing what they had been tasked and instead working on something else which delayed the integration. The second day of ITW created a lot of problems too, mostly caused by a lack of communication in the group, especially when people were pushing their code without talking to the members they were supposed to be working with. Many of the commits had inefficient detail which made it harder to solve problems people had caused. The 3rd day was a lot and we continued integrating the code until the afternoon on the 4th day where we began system testing. The 5th day of ITW was spent QA'ing code and further system testing.

Once the code was finished, we agreed as a group to work on the documentation over the weekend so we could review it Monday morning. This was to allow us to finish the project early and give Waylen and Brad more time on their graphics assignment. In the end we ended up reviewing and adapting the documentation until Wednesday morning.

## 4. FINAL STATE OF THE PROJECT

The project is mostly where we want it to be, with only a few minimal issues that would have been addressed if we had more time. The rest of the project fills all requirements identified in the requirement specification.

### 4.1 Code

#### 4.1.1 Working

- **Functional requirements**
  - FR1 - When the software starts up you are loaded into the 'Dictionary' page where you can view all the words loaded into the program
  - FR2 - Users can reorder the list by language on the 'Dictionary' page
  - FR3 - Users can search for words in the 'Dictionary' and 'Practice List' page depending on what language they're sorting by
  - FR4 - Users can add/remove words to/from the 'Dictionary' and 'Practice List' pages
  - FR5 - Users can add words to the dictionary from the 'Add Word' page.
  - FR6 - In the 'Dictionary' and 'Practice List' page (Only working on the 'Dictionary' and 'Practice List' page)
  - FR7 - Users can view the practice list by going to the 'Practice List' page
  - FR8 - Users can go to the 'Flashcard' page to view flashcards
  - FR9 - Users can test themselves on their practice list by going to the 'Study' page
  - FR10 - On the 'Study' page one of three tests are selected.
- **Performance requirements**
  - PR1 - The response to user input is less than one second.
  - PR2 - The application runs on Windows 10 on a 1920x1080p display. (Hasn't been testing on university workstations due to pandemic)
- **Design Constraints**
  - DC1 - We initially built the project using Java 13, but the project has been tested and works fine in Java 12
  - DC2 - We used Jackson *ObjectMapper* class for importing the json file, we also used many JavaFX classes to help build the UI
  - DC3 - The project correctly loads the supplied dictionary json file

#### 4.1.2 Issues

- **Functional Requirements**
  - FR6 - Isn't completely implemented as it's only working on the 'Dictionary' and 'Practice List' pages
- **Other**
  - Highlighted words in the practice list should have white text to be clearer to read and adhere to UI Spec [\[2\]](#)
  - Words aren't sorted in the json file when saved
  - Version numbers of code were never updated to 1.0
  - Commenting could have been more detailed
  - The UI was inconsistent in certain parts with the formatting especially in the 'Study' page
  - The UI sometimes doesn't scale properly (issues with FXML files)
  - JavaDoc was never generated as HTML
  - Not all sections of the code have module tests

### 4.2 Documentation

#### 4.2.1 Issues

- **Design Specification**
  - Component Diagram could be more detailed.

## 5. TEAM MEMBER PERFORMANCE

### 5.1 Kain Bryan Jones [kab73]

**Duty:** Team Leader (Until 14/04/2020), Developer (From 14/04/2020).

**Blog:** <https://startoftheproject.blogspot.com/>

**Agreed upon:** Yes

At the start of the project Kain's performance was an issue, there was a lack of effort put into his work with minimal attention to detail, he demonstrated a lack of knowledge on the project itself and his leadership duties. Fortunately, after an honest discussion early in the project, his performance improved dramatically. He started putting a lot of effort in leading the project and had grand ideas on improving the productivity of the group. Once he stepped down as project leader he freed up his resources to perform much better as a general team member. He still made a few contributions in managing the group here and there. Towards the end of the project Kain became very active with the group and when he had finished a task he would come to the project leader (Oscar Pocock) and suggest what he should do next. From his prior experience as project leader he had a better understanding of the project overview than other members and was able to help answer many of the questions the group had about standards and the project during ITW. Overall Kain performed very well.

### 5.2 Brad Corbett [brc9]

**Duty:** QA Manager

**Blog:** <https://brc9cs22120.blogspot.com/>

**Agreed upon:** Yes

Ever since the beginning Brad has shown to be eager to contribute to the project, he put himself forward for QA manager and created a website to create a central place linking to all the blogs. Where Brad really stood out was during the QA reviews where he had a keen eye for details and would thoroughly highlight all areas of a document that needed changing. At the start of the project Brad showed that he did not know the entirety of his duties as QA manager and later on in the project showed a lack in communication skills and self-motivation in some parts which caused some issues early on in ITW. I think Brad found the first few days of ITW harder than the later days because they didn't allow him to exercise his role as QA manager because he was tasked in integrating his code with the other members'. After the code was integrated in ITW Brad demonstrated how perfectly suited he was for his role, at this point Brad became a lot more self-motivated, creating issues for all the violations of SE.QA.09 he could find. Brad also coded some fundamental parts of the project and was never afraid to ask for help when he needed it. I couldn't have asked for anyone better as QA manager. Overall Brad performed very well.

### 5.3 Henry Dugmore [hjd3]

**Duty:** Deputy Project Leader (Until 03/03/2020), Developer (From 03/03/2020)

**Blog:** <https://hjd3.blogspot.com/>

**Agreed upon:** Yes

During the first few weeks of the project Henry failed to produce the same quality of work as the rest of the group. Often his work from tasks would return incomplete or he would often spend a couple of weeks on a task that shouldn't have taken over a week to do. It was difficult to gauge how he had spent his time for a given week due to the lack of blog posts. It's important to note Henry was severely ill for four weeks of the project but after he came back he still wasn't able to produce the same quantity of work as everyone else. I understand that Henry is also joint honours and lacks some knowledge that the rest of the group had been taught in certain modules but even so I believe he could have tried harder in this project. Henry's performance wasn't entirely down to him but also to the tasks he had been set, which is the fault of the project leaders, both Kain and I (Oscar Pocock). For most of the project Henry was given tasks which I believe he felt were out of his depths, many times he was unsure how he was supposed to find the information he was looking for but would often refrain from asking for help from his peers. As Henry refrained from asking for help, he, along with other members of the group were unfamiliar with git very late into the project. Towards the end of the project Henry became a lot better at communicating with his peers, which made it easier to set him on tasks he could excel at.

During ITW he was set on system testing with Marcin where Henry proved he could produce good work and be self-motivated, it would have been nice if this had happened sooner but he really pulled through in the end. Overall Henry performed okay.

#### 5.4 Marcin Jakobik [maj83]

**Duty:** Developer

**Blog:** <https://marcinjakobikcs22120.blogspot.com/>

**Agreed upon:** Yes

At the start of the project Marcin was very quiet and in meetings rarely spoke unless spoken to. He would work on the tasks he had been assigned and when asked to describe the work he had done he would keep it short. From the face of it you would underestimate his contributions to the group. Like many of the members, for most of the project Marcin wasn't using git properly. At the beginning of the project he would use GitLab's web interface to commit his files on a file by file basis causing many similar commits flooding the project. Fortunately, towards the end of the project Marcin started committing his work properly which made the project a lot more manageable. Marcin showed initiative as when he had issues he would often find the solutions himself or once given a prompt would get to work without hesitation. Marcin's work has always been top quality and extremely helpful at bringing the project to a finish. Overall Marcin performed very well.

#### 5.5 Angus Kay [ank40]

**Duty:** Developer

**Blog:** N/A

Angus, unfortunately, was not present for the majority of the group project and left the group on the 25th of February 2020.

#### 5.6 Tom Perry [top19]

**Duty:** Developer (Until 14/04/2020), Deputy Project Leader (From 14/04/2020).

**Blog:** <https://top19blog.blogspot.com>

**Agreed upon:** Yes

From the very start Tom has shown to care about the project. He was always very confident in voicing alternative opinions or things other group members have overlooked. Being one of the stronger programmers of the group Tom produced many of the fundamental code created in the project, he has always been self-motivated and never settled for the easy way of doing things and instead completed each task fully to the quality you would expect from a top student. Due to the fundamental spike work he had done, Tom understood the technicalities of the project very well and was always available to answer people's queries on the matter. Tom was always happy to step up for any unfinished work and to meet the needs of the project. He often spent his time helping others with the difficult parts of their code while still managing to produce good work from the tasks he had been set. Overall Tom performed incredibly well.

#### 5.7 Oscar Pocock [osp1]

**Duty:** Developer (Until 03/03/2020), Deputy Project Leader (03/03/2020 - 14/04/2020), Project Leader (From 14/04/2020).

**Blog:** <http://users.aber.ac.uk/osp1/wordpress/>

**Agreed upon:** Yes

Since the moment the project was introduced to our group, Oscar was able to immediately be a massive help with communicating clearly with some very bright ideas. Every opportunity he has had since our time working together, he has spent either working on the project, or helping others within the group. Halfway through the project Oscar was promoted to be group leader. I personally feel that this position was made exactly for him. From the moment he gained this position we were provided with a clear time plan where we all had manageable tasks to complete within a reasonable time frame. There was never any hesitation from him in how he could help



and he always either had the correct answer or knew which member of the he could direct us to gain said answer. He was everything we could have asked for as a Team Leader, fellow peer, and now someone I can call a friend. Without the diligent work that Oscar has put in during this group project I personally feel that there would have been no way we would have completed this project on time to the degree we have now. If I was ever to have a group project again or must work in a team where Oscar can be involved. I and I'm sure the rest of the group will agree to choose Oscar to lead again.

**Written by:** Waylen Watts [ncw]

## **5.8 Waylen Watts [ncw]**

**Duty:** Deputy QA Manager

**Blog:** <https://waylen-watts-cs22120.blogspot.com/>

**Agreed upon:** Yes

Waylen has always been a talkative member of the group, when he isn't bringing great ideas to the table he's raising the morale of the group. Waylen has had a few hurdles throughout the project whether that be personal issues or technical ones but he's always pulled through. With everything going on he's always shown a good balance between the group project and personal life. Waylen is very self-motivated and determined. He's made major contributions to most of the documentation. In some unfortunate circumstances, has taken on another less active member's workload when working together. Even during difficult circumstances, Waylen would always complete the work to a high quality even if that meant working outside usual hours. Most of the extra functionality our program has is down to Waylen's suggestions like the ability to input Welsh characters in certain screens. Waylen was also shown to be an incredible deputy QA manager, like Brad, he would very often pick up on details other people have missed and would suggest simple rewrites of sentences to make the documentation easier to read. Like Brad, Waylen didn't know all of his duties till later on in the project and would sometimes need reminding of the responsibilities of his role but after the first few he didn't need any further prompting. Fortunately, he rarely had to step in for Brad instead mostly working alongside Brad, when he did step in he had shown to be as versed in QA'ing as Brad. Overall Waylen performed incredibly well.

## **5.9 Luke Wybar [law39]**

**Duty:** Developer

**Blog:** <https://lukewybar.wordpress.com/>

**Agreed upon:** Yes

Luke has been a key member of the group since the beginning, he is by far our strongest programmer and created much of the foundation that our project was built on. Luke had a much greater technical understanding of the project than any other member similarly to Tom, due to his background in programming. He often finished his tasks a lot faster than other members of the group due to his programming skills and determination, due to this he was often tasked with a lot of the programming ground work. Without his contributions the project would most likely be completely unfinished. He was always a pleasure to work with and was always happy to help other team members with programming and git. Unlike many of the other group members, Luke set out to learn how to use git properly from the start and was one of the first members to start using git at the beginning of the project. Luke had a few events in his personal life which meant he was unavailable for part of the project, even with this he was able to help people where he could and when he returned he worked even harder than he did before making up for his lost time. Overall Luke performed incredibly well.

## **6. CRITICAL EVALUATION OF TEAM AND PROJECT**

### **6.1 How the group performed as a whole and how could that be improved**

Overall the team performed decently as a whole, we weren't making much progress at the beginning but, eventually we picked up the pace. Along the way we discovered people's strengths and weaknesses and used that to our advantage to make sure the right people were doing the right jobs. A few members resorted to sharing files over email and Discord rather than using git, using git was a big issue for a few members as they never got comfortable with it until the end of the project. Kain and myself heavily encouraged people to utilise git from the start and that it was important to feel comfortable with it before we got too far into the project.

Unfortunately, some group members were still refrained from using git or were using it incorrectly late into the project. There have been a few hurdles, people's personal life, technical difficulties, and the issues caused by the pandemic. A few members needed some encouragement but towards the end of the project, where we worked a lot closer together, everyone was contributing equally and everyone was vital in bringing the project to the state it's in today. In retrospect we could have communicated better with each other and worked more hours from the start of the project.

### **6.2 Improvements to the project set**

The project that was set would only benefit from small changes for example the use of git was very limiting, we were told to only use the master branch and not to create further branches for testing and extra features. Certain members of the group weren't comfortable with the steep work load at the start of the project, for many people this was their first big group project and many felt they were dumped into the deep end. Other members mentioned that it was difficult to find the time for other modules as this module was so time dominating. Although the project was described in a logical way for some students it was quite jarring and hard to gauge how much work they needed to be put in from the start of the project. 140 hours is hard to picture and instead could have been broken down better. Some also complained that the outline of the dynamics of the groups could be clearer as they saw in other groups where some people stuck to their management roles and abused their position. In general I feel a lot of the issues people had with this project reflect the issues you'll come across in the industry, so in contrast to the comment above, I personally think the project didn't need many improvements.

### **6.3 What we learned about software engineering and working as part of a group**

The most important lessons learned were the importance of communication and responsibility within a group. You can be told how to write code in a way other people can understand it, but it's difficult to prepare yourself to integrate your code with code you haven't written. It's easy to understand what you've written but to try and make others understand what you've written is harder than it first seems. We learned that it's okay to make mistakes or get things wrong as long as you can feel comfortable working with your group to get it resolved. We also learned, through practice, the fundamentals in the software development lifecycle. We understood that no matter how much you design a system, when it comes to developing it you're likely to find issues that lead you to adapting the design. Finally, we learnt that although people have their strengths and weaknesses there are sometimes jobs that nobody is comfortable doing, in those cases you just need to try your best and depend on your group more than you would usually.

## **REFERENCES**

- [1] Design Specification - Group 20
- [2] UI Specification - Group 20
- [3] Test Specification - Group20
- [4] Kain's blog post: Picking up the pace -  
<https://startoftheproject.blogspot.com/2020/02/picking-up-pace.html>
- [5] Requirements Specification for Welsh Vocabulary Tutor (SE.QA.CSRS)

## **DOCUMENT HISTORY**

<i>Version</i>	<i>CCF No.</i>	<i>Date</i>	<i>Changes made to document</i>	<i>Changed by</i>
1.0	N/A	06/05/2020	Initial document creation	OP, KB