Monash University

Mobile Assisted Language Learning and its Impact on
Student Motivation and Acquisition

This thesis is presented in partial fulfilment of the requirements for the
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Abstract

This study examined previous works relating to Mobile Assisted Language Learning (MALL), outlined hypotheses it deemed logical, and examined their validity by evaluating the participation and experience of two groups of students; MALL and CALL. In order to achieve this objective, the Monash MALL System was built for the purpose of facilitating the two group's studies via their respective mediums (mobile phones and computers). The MALL students participated in a six week exercise program via the use of their mobile phones and SMS technology, while the CALL students participated in the same program via the use of their personal computers. The system was also built with the functionalities to serve tests and questionnaires, which were used in this study to retrieve students' feedback as well as student retention scores after the study's completion.

Declaration of Originality

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institute of tertiary education. Information derived from the work of others has been acknowledged.

Vedran Askraba

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1 Introduction

Mobile Assisted Language Learning (MALL) is a new research area and very little or limited research has been conducted in this field. It refers to the use of mobile devices and technologies in language learning, typically second language acquisition (SLA). Theoretically, this study views MALL as a concept derived from two separate research areas; mLearning (Mobile Learning) and CALL (Computer Assisted Language Learning). MLearning is the notion of location independent learning via portable devices with connectivity capabilities such as PDAs (Personal Digital Assistant) or mobile phones. Accessibility and interaction are some of the main advantages of this relatively new area (Koole and Ally 2006), which make it suitable in environments where such attributes are educationally beneficial. CALL is a more established research area, and refers to the use of computers for teaching and assessing language learning, typically as an interactive tool. As opposed to mLearning which refers to learning in general via portable devices, CALL is specific to language learning with use of computer technology and considerable research has been conducted in regards to its application.

This study provides an in depth review of previous works relating to the MALL field, as well as an examination of a number of hypotheses derived from these works. The study outlines the methodology behind these examinations, as well as the system architecture of the Monash MALL System which facilitated the research process.

1.1 Thesis overview

Chapter 1 introduces the MALL field as well as the purpose of this study.

Chapter 2 discusses previous works relating to the MALL field.

Chapter 3 outlines a number of hypotheses which are evaluated and examined throughout the following chapters.

Chapter 4 outlines the methodology behind the examination of the hypotheses.

Chapter 5 provides the Monash MALL System architecture which was used to facilitate this study.

Chapter 6 provides the results of the study, excluding qualitative data analysis.

Chapter 7 reflects on the results, and includes qualitative data to support or disprove findings.

Chapter 8 summarises the findings and outlines future research.

2 Literature Review

This chapter outlines previous works relating to MALL while also introducing the field of language learning, including research in regards to student motivation.

2.1 Leading up to MALL

This study treats MALL as a hybrid field of inquiry, one that benefits from the advantages and bears the shortcomings of its parent fields. For this reason, with the aim to familiarise the reader with its evolution, an outline of its related fields is provided.

2.1.1 Introduction of Computers in Education: Computer Instruction

Computers were introduced to education mid-way through the 20th century. At the time of their induction some enthusiastic predictions were made, most of which were later confirmed accurate. Suppes (1966) spoke of personal computer tutors, and argued that individualised (personalised) instruction is one of the core benefits of this technology. Suppes explained that throughout history privileged students reaped the rewards of individualised instruction, in that their learning was customised to their own needs by their own tutors. Suppes pointed out that the computer's ability to track students' progress and make decisions regarding the order of learning modules students should undertake is highly beneficial. Suppes also noted potential problems. The question of curriculum design was raised as an important one, with examples of potential approach issues in elementary language learning. In regards to this question, Suppes concluded that the academic community was far from finding the answer.

2.1.2 Introduction of CALL

CALL first appeared in the 1960s, shortly after the introduction of computers in educational settings. Scholars were quick to identify the potential of computer instruction in language learning, and have been studying this field ever since. Warschauer and Healey (1998) identified three main stages in this long era; behaviouristic CALL (introduced in 1960s, and involved simple "drill-and-practise" exercises), communicative CALL (introduced in the late 1970s, and involved text reconstruction exercises), and integrative CALL (introduced in the late 1980s, and involved listening, reading, speaking, and writing exercises on personal computers at home). Warschauer and Healey explained that these developments not only coincided with the advancements in computing technology which had provided for greater pedagogical possibilities, but also with academic criticism of certain pedagogies and introduction of new and innovative approaches to language learning and teaching. In their analysis of the future of CALL, Warschauer and Healey concluded that only when computers "naturally integrate" into the language learning process, will they be viewed as one of the key elements in language learning.

2.1.3 Introduction of mLearning

MLearning was introduced during the 1990s as a result of technological as well as mobile communication advancements of this era. One of the pioneering projects, MOBIlearn and M-Learning (the project), were funded by the European Commission with the aim to improve the learning experience and motivate learners with any-time, any-where learning. MLearning was regarded to have considerable potential in increasing student motivation. This still remains the general attitude amongst researchers, although the general consensus is that PDAs are seldom used, whilst mobile phones still have a number of limitations and have not evolved to the extent where they can fully support learning. Some of these limitations are low storage capacity, low processing power, and poor connectivity (Shudong and Higgins 2005).

Furthermore, the lack of standardisation also prevents mobile phone owners from enjoying universal educational applications and content, as such applications cannot be developed with such a high degree of platform independence.

2.1.4 Introduction of MALL

Although still in its infant stages, the MALL field looks to be promising. It can be best conceptualised as the amalgamation of its three preceding research areas; its distant cousin Computer Instruction, and its closer relatives CALL and mLearning. One could argue that it only makes sense to combine the tutoring ability of computers, language teaching capability of CALL, and any-where and any-time interactive attributes of mLearning into one dedicated SLA facilitating field. Countless positive and preliminary assumptions can be drawn, some of which are increased student motivation, interactivity, and an immersion or a more frequent engagement with the language studied. From this perspective, MALL may be the natural integration of computers in the language learning process which Warschauer and Healey (1998) spoke of. It can be argued however that MALL arrived prematurely, inheriting the technological limitations from mLearning. Current mobile technology and especially mobile phone technology is no match for personal computers, hence its inability to serve CALL type applications. Furthermore, as Shudong and Higgins (2005) argue, the integration of mobile learning into students' lives may in fact be counterproductive, as students may find it intrusive of their time away from study. These are crucial questions which are yet to be addressed, or may have only been touched on due to the lack of extensive research in this new field. This study provides an in depth analysis of previous work in this chapter's subsequent sections.

2.2   Introduction to Second Language Acquisition

SLA is an extensive area whose scope goes well beyond MALL. This section provides an overview of SLA and aims to acquaint the reader with aspects of SLA which are especially relevant to MALL.

2.2.1   Approaches to SLA

Whilst MALL aims to facilitate language learning, one must also recognise that there exist a number of approaches to SLA and that MALL systems may apply one or more of such approaches in order to assist the language learning process. This study makes a special emphasis on this section as it is imperative to attain a firm grasp on the types of pedagogies that may apply to MALL systems in order to evaluate them. Because a widely accepted MALL framework has not been introduced thus far, this study categorises MALL systems according to general psychological learning theories (behaviourism and constructivism), as well as their sub-theories, including those specific to language learning.

Behaviourism in language learning maintains that all acquisition occurs by the forming of habits. In practise, language learners typically repeat or imitate language (either in written or oral form), and receive positive reinforcement for correct repetitions or imitations. It is this process that forms habits, and is widely known as the drill-and-practise approach. With the premise that one's language learning is achieved by the formation of habits, it is also considered that language learners' first language (L1) habits will interfere with those of the second language (L2), and that these errors are rectified by the formation of new habits.

Constructivist theories concentrate on the student instead of the teacher. It is maintained that students encounter situations and develop their own understandings from these experiences. With an encouraged sense of autonomy, it is regarded that students construct their knowledge by processing new information with their current understanding. While constructivism maintains that students actively develop their knowledge, it also maintains that

students' learning progress is affected by their beliefs and attitudes, as well as their overall context. Numerous constructivist methods of instruction have been introduced to assist in the developing of students' knowledge. Some of these are the collaborative, task-based, situated, and interactionist approaches.

Collaborative learning is a general method of instruction in learning, and involves the combined effort of students by engaging them with a specific exercise, where students assist each other in achieving a common goal. Task-based learning is a language learning method of instruction of collaborative nature, where the focus is on completion of tasks using the L2. In task-based learning, groups of students attempt completing a well defined task, and the assessment normally regards the task completion, rather than accuracy of the use of language. Interactionist learning is also a language learning method of instruction, and maintains that learning a language by interacting with native speakers is of great importance. Situated learning maintains that learning can be improved by making sure it takes place in appropriate environments or contexts. Situated learning is a general learning method of instruction, and is often used in museums and facilitated by mobile devices. Situated learning involves exposing the student to learning material that is relevant to the context in which the student is currently present.

2.2.2 The motivation factor

Motivation is viewed as an important factor in language learning, and a number of theories regarding motivation in language learning have been introduced since the 1950s. Gardner and Lambert (1959 and 1972) classified motivation into two types: instrumental and integrative. The instrumental type referred to motives such as completing studies, furthering one's employment opportunities, or any other must-do-to-achieve motive. The integrative type referred to motives such a general like of another culture, and can be identified as the direct reason of the student's study, rather than an indirect obstacle on a path to an overall educational or professional goal. Dörnyei (1990) argued that

the integrative type can also be defined as a general aim to assimilate with intellectual values of a culture and language, for example French literature or cinema.

Noels (2001) found that both types (integrative and instrumental) may form one's language learning motive, as a combination of factors may influence students to take on language studies. For instance, those who wish to travel to an L2 speaking country and immerse themselves in its culture whilst also aiming to complete studies which would qualify them to work in this setting would have a motivational makeup of both the integrative as well as the instrumental type.

Deci and Ryan (1995) introduced a self-determination theory which involved extrinsic and intrinsic motivation, correlating to the instrumental and integrative types. Intrinsic motivation was identified as one where the student may be motivated by their interest and enjoyment without an expectation of awards. Extrinsic motivation on the other hand was identified as one where the student may learn a language as a means to an end, and the student is motivated by potential awards, recognition, or punishment.

Noels, Clément, Pelletier, and Vallerand (2003) highlighted a number of projects which were analysed using the intrinsic-extrinsic theory, and found that the intrinsically motivated students were more likely to continue their studies than the extrinsically motivated students.

2.3 Previous work in MALL

Considering the MALL field is in its inaugural stages, limited research has been conducted thus far in regards to its implications on language learning. This section breaks down and outlines preceding MALL research in two categories; conceptualising MALL (theoretical) and case studies (practical).

2.3.1 Conceptualising MALL for SLA

The Norbrook and Scott (2003) paper addressed the potential impact of mobile language learning on students' motivation by providing students with extrinsic incentives in a task based learning environment. The authors specified a number of motivational features for mobile language learning systems that may encourage students. The establishment of a virtual community, one where students earn a "virtual currency" for completing tasks as well as assisting others was mentioned to have considerable potential. It was noted that learning anywhere, anytime, whilst passing time may be beneficial, but doing so and being awarded or recognised may trigger students to contribute more effort. Norbrook and Scott concluded that whilst competition quizzes or group activities may appear as logical motivational tools, especially with attainable awards or recognition, practical research needs to be conducted to support this idea.

Kadyte (2003) outlined a method for design and implementation of mobile systems for language learners. The paper illustrates freedom of learning as "a process evolving within different dimensions of time, information, and location". Kadyte made logical assumptions that these dimensions do make an impact on the learner's experience, and that the learning community is ready to interconnect them by the use of mobile technologies. Kadyte's concept relies on the reality that system to user, user to system, and user to user information exchange is not governed or confined by time or location. Kadyte highlighted the importance of identifying and taking into account users' complete environment, rather than just their location at the time of study. Cultural differences were also identified in the paper as a contributing factor in usage patterns of mobile systems. It was noted that previous surveys conducted by the Institute of Advanced Management Systems Research (IAMSR) in five different countries yielded different results, which as Kadyte suggests, implies that cultural diversity in technology usage may have an impact on the final success of mobile systems. The paper includes a brief outline of a sample system as a guide, where the content and the manner in which it is portrayed

are derived from users' pre-defined preferences. In Kadyte's analysis, it is concluded that an implementation of a complete system, one that meets specific needs of users and provides for true "freedom of learning" is yet to be realised, and that further research is required within this field.

Collins (2005) also introduced a model for the utilisation of existing and forthcoming mobile technologies with language learning pedagogy, and explored the potential of current and evolving mobile phone technologies within this context. The author indicated that current technology is limited in its ability to facilitate user interactivity, not allowing for student response analysis and feedback. It was noted that current technology is rather static, and more suited for non-interactive content. Collins also noted that mobile interactivity should also be expanded to allow for educational gaming and project based learning, by exploiting current capabilities of capturing sound, pictures, and text. Having outlined limitations, Collins also provided a list of language learning exercises which can be delivered with current mobile phone technology capabilities. Some of these are short dialog text, audio read-along, picture dictionary, phrase book, and test preparation capabilities. Collins also anticipated that in the near future mobile phone technologies will introduce features of a more interactive nature, such as video or animation, sound file submission for potential evaluation, learner communities, and location-specific content via GPS. In summary, Collins concluded that the development of such technologies should be guided by good pedagogy, and that considerable potential does exist for the introduction of mobile technologies in language learning contexts.

2.3.2   MALL case studies

Whilst all of the following practical implementations of MALL are driven by the same goal of providing for language learning anytime and anywhere, this chapter separates them into two distinct types. The first is MALL with mobile phones and the second is MALL with PDAs. This study differentiates between

the two because these technologies differ not only in their purpose, popularity, and availability, but also functionality and capability. Their presentation in a categorical order should provide the reader with a feel for the capabilities of these devices, and a sense of what is technologically achievable with both.

2.3.2.1 MALL with Mobile Phones

Dias (2002a, 2002b) conducted a survey study, followed by a system evaluation of mobile phone use in an English Foreign Language (EFL) class at a Japanese University. Encouraged by survey results, which indicated students have heavily integrated mobile phones into their lifestyles, Dias introduced a bulletin board system (BBS) as well as a webpage containing links to mobile phone accessible English content. Both the BBS and the webpage were accessible from mobile phones as well as from personal computers. Dias found that 82% of the students had utilised the provided content, and noted that this was highly successful considering its use was voluntary. It was also noted that whilst the majority of students accessed the BBS via mobile phones (70%), only 11% of all messages were posted via these devices, indicating personal computers were the preferred option for submitting responses.

The Levy and Kennedy (2004) study evaluated the suitability of short message service (SMS) messaging for vocabulary acquisition. The study was conducted with eighteen Italian literature and society students from an Australian University in an out-of-class context. The study kept students in touch with syllabus material between weekly tutorials. This study was motivated in part by earlier findings of Dias, and drew on established research which indicated that memory in general (Baddeley 1990), as well as vocabulary acquisition in particular (Bloom and Shuell 1981, Nation 2001), are best facilitated or promoted through distributed rather than concentrated study. The study used focus groups, telephone interviews, questionnaires, and polls, and involved a program where students were sent SMS messages with syllabus material throughout seven weeks. The number and frequency of messages were

pre-determined by students' preferences. The overall feedback was very encouraging; with seventeen out of eighteen students indicating that they enjoyed receiving the messages and one student responding negatively due to a general dislike of mobile phones. Within the focus groups, students expressed their appreciation of a number of features, such as reinforcement of vocabulary, inclusion of out-of-class material such as current affairs, as well as the program's ability to keep students in touch with the course and thinking in Italian. Students also noted that they would have liked features such as homework reminders as well as English translation. Levy and Kennedy concluded that curriculum design was a key factor in the project's success, and that the technology alone would have only achieved its pedagogical goals if used appropriately within the context of the subject studied.

Having conducted mobile device usage surveys in a Japanese University and found encouraging statistics (similarly to Dias), Thornton and Houser (2004) also targeted vocabulary acquisition via push media (technologies where recipients do not trigger the sending of the message, such as SMS or Email) with EFL students. The study took advantage of wide-spread use of mobile phones in Japan, and much like Levy and Kennedy aimed at creating a program suited for vocabulary expansion with long term retention in out-of-class activities. The program involved sending messages three times per day to forty four female University students, and aimed to teach five words per week whilst also revising previously attained vocabulary. The messages introduced words in a variety of contexts. Students' experience was evaluated via a post-experiment questionnaire where 93% of students responded favourably to the vocabulary reinforcement approach, with 71% preferring the messages on mobile phones rather than personal computers, and 89% wishing to continue with the program. Furthermore, 69% of students indicated that the small screen size was not unsuitable for the type of messages received. It was found that SMS based learners acquired 6.5 words on average per week, and that Web learners acquired three. Students who did not receive messages also trailed behind their SMS peers, with only 48% improving on the post-test scores, whilst 88% of the

SMS based students showed improvement. Thornton and Houser did note that many students postponed viewing of the messages as they were busy at the time of SMS message arrival. Having considered the overall results however, the authors did conclude that the use of push media was an effective method for promoting regular and spaced study.

Kiernan and Aizawa (2004) also evaluated the suitability of mobile phones in language learning. However, unlike Levy and Kennedy or Thornton and Houser, the authors concentrated the study within a task-based learning scenario. The study evaluated both upper and lower level Japanese University EFL students, where both levels were split into three groups; a mobile phone email, a personal computer email, and a face to face group. This last group was initially a mobile phone speaking group, but was abandoned due to potential cost of calls. Each group was made up of three to five pairs of students. In the case of this study, mobile phones were used to facilitate students' cooperation. Students were only allowed limited time to complete each of the tasks. The authors found that face to face students' interactions were the quickest, and were the only of the three groups to complete all the tasks within the time specified. Only one pair of mobile phone email students and two pairs of personal computer email students completed all the tasks in time. While mobile phone email students were the slowest, personal computer email students were only slightly faster. Kiernan and Aizawa concluded that the results correlated to the speeds at which students were able to communicate, with mobile phone email students being confined to a touch pad, and personal computer email students to a keyboard. It was also found that mobile phones were not well suited for exchanging larger quantities of information due to the confined nature of these devices, which may indicate that they may only be suitable for shorter beginner-type exercises.

2.3.2.2 MALL with PDAs

Cho, Kim, and Lee (2004) have introduced M-CALL (Mobile Computer Assisted Language Learning), an interactive online software application for Korean language learners in Korea. The software runs on PDAs and applies a task-based approach to language learning. It involves an interactive game where students nurture a "cyber pet" by solving problems in the Korean language (as problems are solved, the pet grows) and provides content from a central server. The software aims to increase students' interest and allows volunteer tutors to assist students with their own portable devices or computers via the web. Students' responses are recorded on the M-CALL server so that tutors can analyse their progress and assist them in areas of difficulty. M-CALL also allows students to make appointments with their tutors. Whilst no information is provided in regards to the success of its application, Cho, Kim, and Lee's paper provides readers with a good idea of PDAs' capabilities in terms of facilitating a MALL system.

Cui and Bull (2004) have presented TenseITS, a software solution built to support Chinese students learning English, and specifically aid their use of tense in the English language. What distinguishes TenseITS from other MALL systems is its ability to provide content suitable for students' current circumstances. When encountering free time, students can provide details of their location and probability of being interrupted. Armed with this data, TenseITS can supply them with learning modules suitable for their current concentration level as well as amount of time at their disposal. This approach partly ties in with Kadyte's views, maintaining that mobile language learning systems should tend to users according to their overall circumstances, rather than just time and location of study. Cui and Bull have provided a number of interesting and informative case studies relating to TenseITS use, although a real life evaluation was not presented in their paper.

Ogata, El-Bishouty, and Yano (2006) also focused on providing suitable information according to students' circumstances in their proposal for a collaborative mobile language learning system - CLUE (Collaborative Learning

support system in a Ubiquitous computing Environment). The system was designed for GPS (Global Positioning System) capable PDAs, with the intention to help Japanese EFL students as well as students learning Japanese in Japan assist each other in their learning. CLUE allows students to share previous experiences and attained knowledge through "Knowledge Awareness Maps". The system allows students to view a map surrounding their current location and identify educational material in their proximity, find peers who have previously studied this material and can help them solve any problems associated with the material, as well as find peers who are actively studying the same material and can collaborate to solve the problem together. Whilst Ogata, El-Bishouty, and Yano did outline an interesting model for a collaborative MALL system, no evaluation of CLUE was provided in their paper.

Ogata, Yin, Paredes, Oishi, and Ueda (2006) have introduced a more detailed study of PDA with GPS use in mobile language learning with students studying Japanese as a foreign language in Japan. A program named One Day Trip with PDA involved using a system called LOCH (Language learning Outside the Classroom with Handhelds) to engage thirteen University students in a day-long adventure type exercise. The students explored the city, performed tasks assigned by their teacher in a real world scenario, and interacted with other Japanese citizens in order to achieve their objectives. Throughout the day, students received instructions or helpful hints by their teacher who was kept aware of their location via GPS. Ogata et al. evaluated LOCH by use of a concise questionnaire, where students indicated they enjoyed the experience and wished to use the system again.

Markiewicz (2006) pushed the limits a step further by presenting PALLAS, a system similar to LOCH (supporting students in out-of-class learning) with a few technological advancements. Whilst LOCH provides students with specific exercises as outlined by their teacher, PALLAS is context aware, and has the ability to support students in their day to day life, with support for extensive pre-provisioned content libraries. Furthermore, PALLAS was implemented as a client application, as opposed to LOCH which

implements a web-based architecture. Markiewicz argued that such an approach is beneficial in the context of mobile language learning software as the PALLAS smart client requires only intermittent connectivity to achieve its purpose, unlike standard web browser based applications. Although PALLAS was evaluated by means of a pre-determined checklist, the thesis does not include an assessment of the system's suitability by language learners.

2.4 Analytical perspective

The MALL field is evidently scattered in its approach to overall design. It appears that researchers addressed MALL from different perspectives, with little consensus regarding a standardised framework or methodology. It can be argued however, that this variance in approach is merely the consequence of the establishment of this new field, and general excitement of the academic community which has surged into experimentation without much consideration of the overall pedagogical as well as motivational effects. In fact, this may be true of any emerging field, and while our cousin mLearning is also a new area, it has enjoyed a longer time in the lime light and thus benefited from further research including that of analytical nature. For instance, some of the major reviews in mLearning identified the same issue of approach inconsistency and as a response categorised preceding research according to certain patterns or trends.

Kukulska-Hulme and Traxler (2005) classified previous mLearning work according to relevant pedagogies, while Naismith, Lonsdale, Vavoula, and Sharples (2004) did so according to the purpose of the technology implementation. This tension between two poles of interests or fields of expertise exists in the MALL paradigm as well, one being the approaches to learning and teaching languages, and the other to educational technology. While Norbrook and Scott, Kadyte, and Collins conceptualise, and Dias, Levy and Kennedy, Thornton and Houser, Cui and Bull, and Markiewicz implement MALL from the educational technology perspective, Kiernan and Aizawa

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(task-based), Cho, Kim, and Lee (task-based), Ogata, El-Bishouty, and Yano (situated and collaborative), and Ogata et al. (task-based and interactionist) implement MALL from the language learning and teaching perspective.

It is interesting to note that although approaching from an educational technology perspective, Dias, Levy and Kennedy, and Thornton and Houser have indirectly implemented a typical behaviourist learning model, while Markiewicz has indirectly implemented what can be classified as a situated learning model. Perhaps the educational technology approach and the language learning and teaching approach go hand in hand? If we take a step back and delve into more established and mature fields we will find that communication between different poles or fields of expertise should be actively encouraged. Duffy and Jonassen (1992) have done this with those who advocate constructivism and those with a background of technology of instruction. To what extent does such an agenda need to be set for the two poles of interest found in MALL?

Since we are taking lessons from related, more mature, and wiser fields of inquiry, it should also be noted that in their conceptual framework for eLearning (learning online, mLearning parent), Garrison and Anderson (2003) placed a special emphasis on the effects on motivation. In young MALL however, in-depth studies dedicated to motivation are yet to emerge. MALL needs to be articulated on these issues, as preceding and mature research areas which aim to reach the same goals of education enhancement have found these issues to be of most importance.

MALL has the potential to facilitate almost all forms of language acquisition. Because of the integral nature of mobile devices and their communication capabilities, it is assumed that they can provide for all forms of language learning and teaching approaches. Furthermore, considering the nature of language learning, where students are encouraged to keep regular contact with the language itself, mobile devices appear to be an ideal facilitator of this interaction. Unfortunately, with the exception of vocabulary acquisition (Levy and Kennedy and Thornton and Houser), concrete evidence of improved

acquisition as a result of MALL involvement has not been presented. This does not stop us from assuming however, that interactive MALL in areas such as grammar and conjugation would also be beneficial.

Interestingly enough, nothing in the preceding research sheds any light on MALL's impact on student motivation. The potential increase of motivation by seamlessly integrating language learning into students' lives by utilising well-familiar technology may be obvious, however extensive research must be conducted in order to eliminate any doubt of the possible novelty effect. No indication was given regarding any correlation between students' MALL usage statistics, and their results. Furthermore, no indication was given regarding any correlation between students' attitudes and their results either. To be sure that MALL provides a boost in acquisition it must be demonstrated that it is MALL that provides the students with the edge, instead of other variables that may not have been taken into account.

At this stage, MALL appears to have much more potential than it has answers. There exist ample opportunities for further research, both at the theoretical as well as practical level. To begin with, some consensus needs to be reached regarding the approaches to implementing MALL, while more research needs to be conducted on the effects of MALL in areas other than vocabulary acquisition. MALL is directly related to its parent fields and as such does not need to reinvent the wheel. Lessons need to be learnt from its wiser parent fields, mLearning and CALL, with appropriate modifications in the context of any-time-any-where language learning.

3 Hypotheses

Based on previous research within the MALL field, as well as this study's logical assumptions, this study will outline four hypotheses and set out to explore their validity. This chapter elaborates these hypotheses, while their testing methods and results are outlined in the subsequent chapters of this thesis.

3.1 Facilitation of distributed study

Noting the conclusions of Thornton and Houser (2004), as well as student feedback from Levy and Kennedy (2004) research, this study makes the hypothesis that MALL naturally promotes spaced and regular study and as such facilitates frequent study as it keeps students in regular contact with the target language. It is expected that MALL will integrate naturally with students' daily patterns of work and study, accessing otherwise unutilised time windows. By applying push technologies such as SMS, it is expected that the students will be exposed to moderate amounts of study material at appropriate intervals with a device they are well accustomed to. Furthermore, such an approach will not require students to allocate dedicated time for study, in which case the frequency and the intervals between their studies would be left to their sole discretion. MALL is assumed to seamlessly instigate this process at appropriate intervals and amounts by providing access to exercise or study material in an assertive manner through a customary device during otherwise unutilised time gaps.

3.2 Enhancement of retention

This study makes the hypothesis that MALL will enhance students' retention. Drawing from memory and vocabulary acquisition research (Baddeley 1990,

Bloom and Shuell 1981, and Nation 2001) where spaced (rather than concentrated and sporadic) revision was found to aid retention, this study makes the hypothesis that MALL will enhance students' retention by delivering study material at regular and frequent intervals and as such will facilitate organised and distributed study. Unlike conventional study where students are limited to the location of their workstation or desk, MALL allows students to undertake their studies at any location provided they have adequate time and are free from interruption. Due to this element of location independence, this study presumes that the students will complete most exercises on the day of their delivery, in turn practising spaced study and enhancing long term retention.

3.3   Enhancement of vocabulary acquisition

While this study accepts the premise that MALL suitability may vary across different language target areas, it makes the hypothesis that MALL enhances vocabulary acquisition in particular. This hypothesis draws from aforementioned memory as well as vocabulary research, as well as Thornton and Houser (2004) findings specific to MALL, where mobile phone students had acquired more words from their curriculum than those who used a web based interface. This hypothesis also leads from Levy and Kennedy (2004) findings, where students reacted positively to the use of mobile phones for this purpose. This study also considers MALL to have adequate technological capabilities for delivery of vocabulary exercises and content and expects that students will embrace mobile phones as genuine facilitators of vocabulary related studies.

3.4   Increase of student motivation

This study makes the hypothesis that the integrative nature of MALL will have a positive effect on student motivation. While this study found no evidence of preceding research in regards to this hypothesis, it expects that a positive

experience will spur students on, decreasing the possibility of students abandoning their language studies. This study assumes that MALL will provide for such an experience, considering the widespread use, acceptance, as well as acquaintance of mobile phone technologies by the general public today.

3.5 Hypotheses in summary

In summary, this study hypothesises that MALL:

- promotes spaced and regular study
- enhances students' retention
- enhances vocabulary acquisition in particular
- has a positive effect on student motivation

4   Methodology

In order to evaluate the validity of assumptions outlined in the preceding chapter, this study included two groups of beginning French students. The first group consisted of the MALL students, while the second comprised of students utilising a typical CALL learning tool via an online web interface. Both groups participated in a six week exercise program, post-program questionnaire, as well as a post-program test. Students were recruited via an online subscription form, allowing students to select the group they wished to join. Those who wished to use mobile phone SMS and MMS technology joined the MALL group, while those who wished to utilise their personal computers joined the CALL group. The study also allowed for inclusion of all volunteers, even if the groups were uneven. All participants were undergraduate students from the Monash University Arts Faculty French Studies program, and were invited to take part in the study via an email sent out two weeks prior to course commencement.

As with any study, discrepancies in participant selection can make a considerable impact on the overall results. As the participants cannot be identical, this study endeavoured to minimise the impact of any variables with a well planned strategy. The key to this strategy has more to do with the way data was collected and analysed, rather than the volunteer recruiting process itself. It was understandable that while the students participated in the same course at the same level, their attitude and ability may have differed. For this reason this study emphasised the overall group improvement from the six week exercise program to the post-program test, and compared this difference rather than the results from the post-program test alone. Furthermore, the difference in student exercise correctness during the six week program also served as a reliable indicator in determining the equality of the two groups. This study benefited

from the six week program by both determining the students' habits as well as their accuracy and thus ability.

Whilst the students' ability may have differed, so would the different tools used for program study (mobile phone for MALL and personal computer for CALL students). These would undoubtedly have different effects on student performance, however unlike student ability, a great deal more could be done in order to minimise or eliminate such variables. For this reason, this study placed considerable emphasis on ensuring that the CALL users' web based interface resembled that of the MALL users' mobile phone view, imposing the same pedagogical influence. During the software development phase of the Monash MALL system, the CALL interface steered away from the use of decorative gadgets commonly found on new age websites to entice users and enhance interactivity. This study recognised that the ability of a modern day computer supersedes that of a mobile phone SMS interface. Instead of evaluating or comparing the ability of these two devices, this study focused on exploring student experience and reaction to their use, providing the pedagogical impact of both devices remained the same. CALL students' exercises were represented in the same manner as that of the MALL students', while both groups also participated in the same curriculum.

4.1 Student Sample

Initially, twenty five volunteers registered. Twenty students elected the CALL group, and the remaining five elected the MALL group. Only ten students had actually participated however, as due to unforseen technical issues with student webmail and the MALL system account activation process, fifteen CALL group students never activated their accounts. As a result, this study considered the results of the remaining five active CALL participants and the five active MALL participants. Further details regarding the subscription process issues have been provided in the Discussion chapter of this thesis.

4.2 Target Areas

This study classified all exercise activities by their relevant target areas; numbers, vocabulary, translation, conjugation, prepositions, negation, def. articles, ind. articles, and adjective agreement. Target areas are simply areas of language that students study as part of their language learning process. This in turn provided for specific MALL target area suitability analysis. Target areas allowed the study to analyse and ascertain student willingness to complete specific target area exercises via their medium (computer or mobile phone). Target areas were a key methodological aspect of this study in that they allowed for a more in depth scrutiny of the MALL field, examining its suitability for specific language learning areas instead of generalising the MALL area as a whole. Target areas make this study unique due to its capacity to consider language study areas along with motivational as well as usage factors (data derived from the six week program and post-program questionnaire and test), allowing for extra dimensions in its analysis.

4.3 Six Week Program

The six week program was an integral part of this study as its results were analysed in relation to both the post-program test and the post-program questionnaire. The program progressed from week two to week eight of the students' regular French Studies curriculum. It was of great importance that the program was of adequate length, and lasted a timeframe that could make an impact on student acquisition. Six weeks was judged a suitable period by the Monash School of Languages, Cultures and Linguistics staff, ensuring the program was not disruptive to the students' enrolled studies. It was also critical that the six week program did not overlap the lead-up or preparation time for student exams.

It was also essential that the six week program coincided with the students' regular coursework. Timeliness was a key factor, as a poor exercise delivery schedule could have resulted in considerably poorer results,

frustration, and as a result de-motivation. The six week program exercise target areas resembled that of the actual target area studies students were undertaking as part of their coursework. The six week program was designed by the French Studies language programs coordinator. This was of significant value as the exercises were constructed from a pedagogical viewpoint as well as scheduled according to the students' regular coursework timeline.

MALL students utilised their mobile phones in order to receive as well as respond to exercises at standard mobile network operator costs. CALL students completed the same exercises via a web based interface using their home or university computers. Textual feedback along with exercise answers in audio format would be sent to MALL students via an MMS message immediately after exercise submission. The same feedback would be provided to CALL students via the web based interface, with a downloadable MP3 (audio) file. As demonstrated in subsequent chapters of this thesis, the exercise representation for both groups of students was identical. Whilst both groups of students were able to submit exercises at any time, MALL students were able to change their preferred daily times for exercise delivery. This feature was accessible via an online interface with a student's mobile phone number and password. CALL students could access exercises via the web based interface at any time. In case of difficulty MALL students were able to send an SMS request for help by simply sending an SMS message including the word 'help'. CALL students were also able to send an email requesting assistance. In both cases a system support officer would tend to student queries or troubleshoot any technical issues.

The six week program provided this study with the ability to track student progress by day, week, as well as specific target area. The program also allowed for tracking of student usage, identifying the type of exercises students were either reluctant or enthusiastic to complete. The program also allowed for comparison between the two groups, identifying the medium (mobile phone or computer) which was preferred for certain exercise type completion.

Furthermore, obvious benefits such as overall as well as target area result comparisons were achievable in comparing the students' ability.

Table 1 Six week program exercises

Day	Instruction	Questions	Target Area
1	Change @ to a digit - eg. 22	dix @ quatre @ seize @ huit @ quatorze @ ...	Numbers
2	Add le/la/l'/les	bibliothèque ami travaux histoire salle lundi...	Def. articles
3	Replace @ with un/une/des	@ livres @ étudiant @ cahier @ question @ amph...	Ind. articles
4	Replace @ with translation	a whiteboard @ a woman @ the chair @ the com...	Vocabulary
5	Replace @ with translation	How are you? @ What is your name? @	Translation
6	Replace @ with translation	the man @ a library @ the bookstore @ a mous...	Vocabulary
7	Replace @ and write number	22 @ 31	Numbers

		@ 63 @ 81 @ 73 @	
8	Replace @ with translation	Monday @ Wednesday @ Saturday @ Friday @ T...	Vocabulary
9	Replace @ with verb ending	nous aim@ vous regard@ tu cherch@ ils ador@ no...	Conjugation
10	Insert negative form	J'aime le vin. Tu parles souvent chinois. Il aim...	Negation
11	Rewrite in correct order	mange Il rien ne @ jamais ne Je parle @	Negation
12	Rewrite in correct order	aiment personne Ils n' @ manges pas Tu souvent n...	Negation
13	Replace @ with translation	Italians like coffee. @ They don't listen. @	Translation
14	Replace @ with être	Vous @ riches On @ gentil Jean et moi @ sportifs...	Conjugation
15	Write feminine form of adj.	beau @ heureux @ blanc @ nouveau @ italien...	Adjs agreem.
16	Replace @ with translation	I always eat a pizza. @ He speaks very often.	Translation

		@	
17	Agree adjectives	Il porte une veste [noir] Elles sont [gentil] Il...	Adjs agreem.
18	Conjugate	étudier (je) @ manger (nous) @ être (vous) @ ...	Conjugation
19	Replace @ with translation	I am looking for a shirt @ Shoes are expensive ...	Translation
20	Replace @ with avoir	J'@ 20 ans Tu @ soif Il @ le temps Vous @ faim ...	Conjugation
21	Replace @ with translation	I am worried @ I am thirsty @ You (tu) have an...	Translation
22	Replace @ with translation	I don't like being hungry. @ I hate being thirst...	Translation
23	Replace @ with translation	It's a grey mouse. @ I like talking to my friend...	Translation
24	Replace @ with à/au or de/du	Il joue @ tennis. C'est le livre @ Jean. J'aime ...	Prepositions
25	Replace @ with translation	It's Friday. @ I am looking for Jean's book. @	Translation
26	Replace @ with translation	She is behind the bookstore @ There are six cars...	Translation
27	Replace @ with verb ending	Je fin@ Tu chois@ Elle réuss@ On fin@ Nous cho...	Conjugation
28	Replace @ with translation	He is thinking about the problem. @	Translation

		I'm talking ...	
29	Replace @ with translation	opposite the cinema @ next to the library @	Prepositions
30	Replace @ with translation	I finish studying at 8h @ I often pass exams @	Translation

Please note that the exercises in their entirety are provided in Appendix A as part of the entire Monash MALL System database export. The exercises in Table 2 above have been shortened for presentation purposes.

4.4   Post-program Questionnaire

The post-program questionnaire allowed this study to pose questions and acquire information which would otherwise be unattainable through the six week program or the post-program test alone. It was completed by both groups of students via the web based interface. The primary purpose of the questionnaire was the extraction of motivation related answers. Answers to open questions were especially insightful as they provided the study with qualitative data and identified a number of overlooked factors identified in the Discussion chapter of this thesis. The questionnaire also provided the study with answers regarding the students' views on audio feedback effectiveness. The questionnaire also served as a link between the six week program usage trends and the reasons behind them.

Both CALL and MALL students completed similar questionnaires, however some of the questions differed to cater for the specific group's scenario or technology used. The questions were either open or closed. Open questions were those where students were able to elaborate in their answer, whilst the closed ones confined the answer to one of six responses; strongly agree, agree, neutral, disagree, strongly disagree, and don't know.

4.4.1 CALL group questionnaire

4.4.1.1 Open questions

- Why did you choose to use your computer as opposed to your mobile phone to complete your exercises?
- What was the best feature of the web based learning program?
- Have you had any particular problems?

4.4.1.2 Closed questions

- The 6 week program helped me perform better in my language studies.
- As a result of my participation in this program my motivation increased.
- The program helped me learn better.
- I would like to continue using this method of study.
- I would recommend this method of study to others.
- I found the exercises appropriate in relation to my course.
- I would describe the exercises as being moderately difficult.
- I found the feedback informative.
- The audio feedback helped me with my pronunciation.
- The cost of SMS messages was one of the reasons I chose to use my computer rather than my mobile phone to complete the exercises.

4.4.2 MALL group questionnaire

4.4.2.1 Open questions

- Why did you choose to use your mobile phone as opposed to the web based system?
- What was the best aspect of the mobile phone learning program?
- Have you had any particular problems?
- What mobile phone (model) did you use during the program?

- What sort of impact did the 6 week program have on your learning and why do you think it had such an impact?
- Have you ever logged on the website to change the exercises delivery times?
- Why / why not?

4.4.2.2 Closed questions

- The 6 week program helped me perform better in my language studies.
- As a result of my participation in this program my motivation increased.
- The program helped me learn better.
- I would like to continue using this method of study.
- I would recommend this method of study to others.
- I found the exercises appropriate in relation to my course.
- I would describe the exercises as being moderately difficult.
- I found the feedback informative.
- The audio feedback helped me with my pronunciation.
- Using my mobile phone to complete the exercises was convenient.
- The cost of SMS messages was an issue.
- While completing exercises I referred to my coursework.
- I was comfortable with using my phone to complete the exercises.

4.5   Post-program Test

The post-program test was designed as a twenty minute revision test by the French Studies language programs coordinator. Its primary purpose was to facilitate the comparison between the MALL and CALL students' retention, and was completed via the web based interface after the completion of the six week program and the post-program questionnaire.

While facilitating the comparison between the two groups' general retention, the data provided by the post-program test also allowed for

measurement of retention relating to specific target areas, and as such allowed this study to explore which target area exercises are suitable for mobile phones. The post-program test also allowed the study to explore any links between student retention and the six week program usage statistics, as well as student attitudes and motivation responses from the completed post-program questionnaire.

Table 2 Post-program test questions

Exercise	Target Area
Agree the adjective: Une chemise blanc(?)	Adjs agreem.
Agree the adjective: Une nouv(?) voiture	Adjs agreem.
Agree the adjective: Des chaussures italien(?)	Adjs agreem.
Add correct verb ending: Nous mang(er)	Conjugation
Add correct verb ending: Tu ador(er)	Conjugation
Add correct verb ending: Ils regard(er)	Conjugation
Add correct verb ending: Vous détest(er)	Conjugation
Add correct verb ending: Tu fin(ir)	Conjugation
Add correct verb ending: Vous réfléch(ir)	Conjugation
Add correct verb ending: Elles chois(ir)	Conjugation
Add correct verb ending: Nous réuss(ir)	Conjugation
Write this number in French: 16	Numbers
Write this number in French: 81	Numbers
Write this number in French: 74	Numbers
Translate: She doesn't listen	Translation
Translate: He never speaks	Translation
Translate: You (vous) don't eat often	Translation
Translate: I am twenty years old	Translation
Translate: We have time	Translation
Translate: She is hungry	Translation
Translate: I talk to my friend	Translation
Translate: They speak about music	Translation
Translate: We are looking for Jean's book.	Translation
Translate: She plays tennis	Translation
Write in French: the computer	Vocabulary

Write in French: the bookstore	Vocabulary
Write in French: the library	Vocabulary

It is noteworthy that some of the target areas present in the six week program exercises do not reappear in the post-program test in Table 2. The rationale behind this is provided in the Discussion chapter of this thesis.

4.6 Long term Strategy

The methodology behind this study is a long term endeavour. Prior to the commencement of this project it was determined that only results accumulated over a period of no less than three years could be considered substantial and accurate. In order to eliminate the novelty effect, the study's life span must be considerable and data must be collected throughout a substantial research lifetime. This study is based on data acquired during a single semester. Due to this fact the results of this study thus far can merely suggest emerging patterns or trends, with little concrete or large scale evidence. The main purpose of this thesis is to portray what is achievable with this particular methodology and the Monash MALL system, providing the program recruited a significant number of students and acquired data over a substantial period such as six semesters.

In order to achieve this objective the Monash MALL System was built with an extensive and versatile content management system. The Monash MALL System accumulates six week program, post-program questionnaire, as well as post-program test data and allows for year to year analysis. The system also allows for six week program exercises, post-program questionnaire questions, as well as post-program test questions to be amended or entered at any time, allowing any initial errors to be rectified even deep in the research life span.

4.7 Hypothesis evaluation methods

In order to evaluate the validity of the hypotheses this study considered a vast collection of student usage and response data from the six week program, post-program questionnaire, and the post-program test. The data was collected by the Monash MALL system throughout the three phases (six week program, post-program questionnaire, and the post-program test). The data segments along with its properties are outlined in Figure 1 below. This figure is used throughout this chapter as the reader's visual aid for identifying the data used in a given analysis along with its relationships and origins. For instance, in the case of Figure 1, the analysed data is highlighted for the purpose of identifying a link between CALL students' motivation responses and timeliness of their six week exercises' completion. The data is obtained by querying the Monash MALL system's database via the use of Simple Query Language (SQL) as outlined in the System Architecture chapter of this thesis.
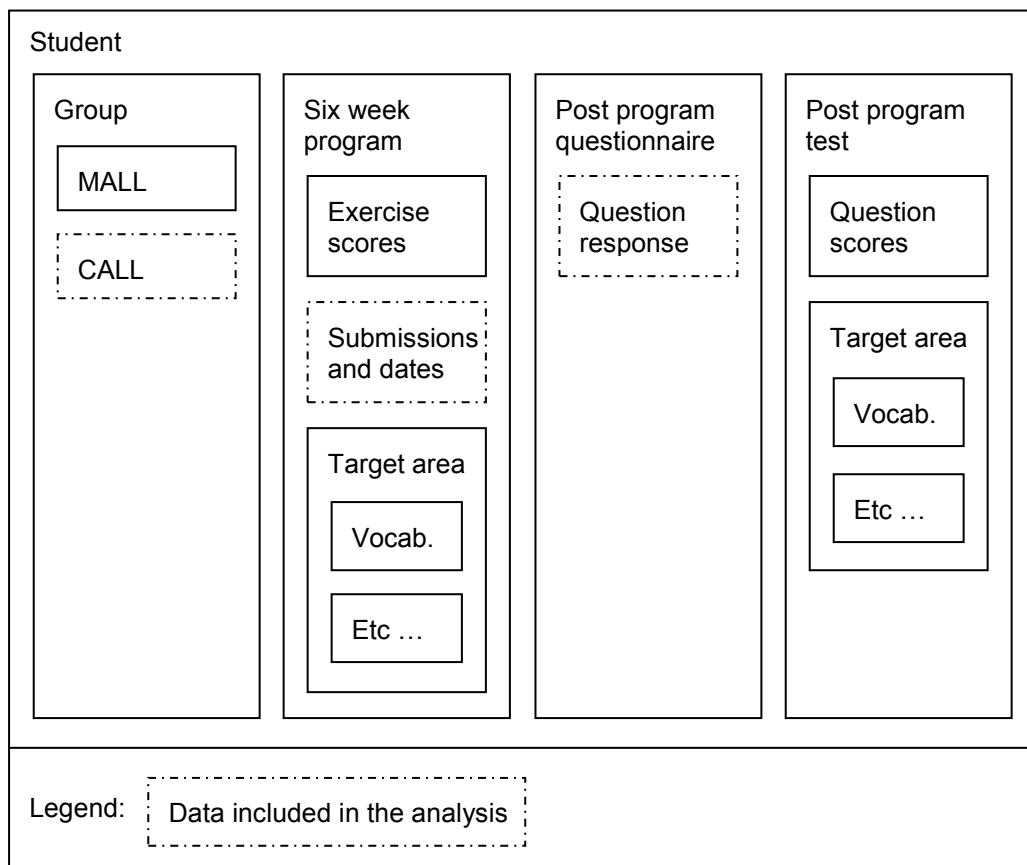

Figure 1 Student data diagram

This study considered that all results extracted from the quantitative data were the consequence of one or more of the following factors:

- The result may correctly reflect the reality.
- Random (student) sampling errors may have occurred. One or both groups of volunteers may have been unrepresentative of actual student populations, and as such one group may have been more knowledgeable than the other prior to study commencement. In other words, in reality, there may be no difference between the two groups. This is referred to as the null hypothesis. Significance tests determine the probability that the null hypothesis is true. This study calculated the probability of the null hypothesis against all averages (results) throughout the Results chapter of this thesis by the application of the independent t-test. This study considered the null hypothesis probability level to be at .05 (internationally accepted statisticians' standard). The theory behind the independent t-test is beyond the scope of this study.
- A bias in procedures (other than sampling bias) may have influenced the result. This study took a number of steps to avoid bias prior to study commencement. These steps are outlined in the System Architecture chapter (Chapter 5) of this thesis. Furthermore, this study also reflects on this matter post program completion in the Discussion chapter of this thesis.

4.7.1 Facilitation of distributed study

Two tests were performed in order to test MALL's ability to facilitate distributed study. Both tests compared differences between the two groups of students, MALL and CALL. The first test identified the percentage of exercises that were submitted on different days throughout the six week program by each of the two groups' students. The study was therefore able to identify the actual

percentage of student study undertaken at different times throughout the six weeks by considering the data illustrated in Figure 2 below.
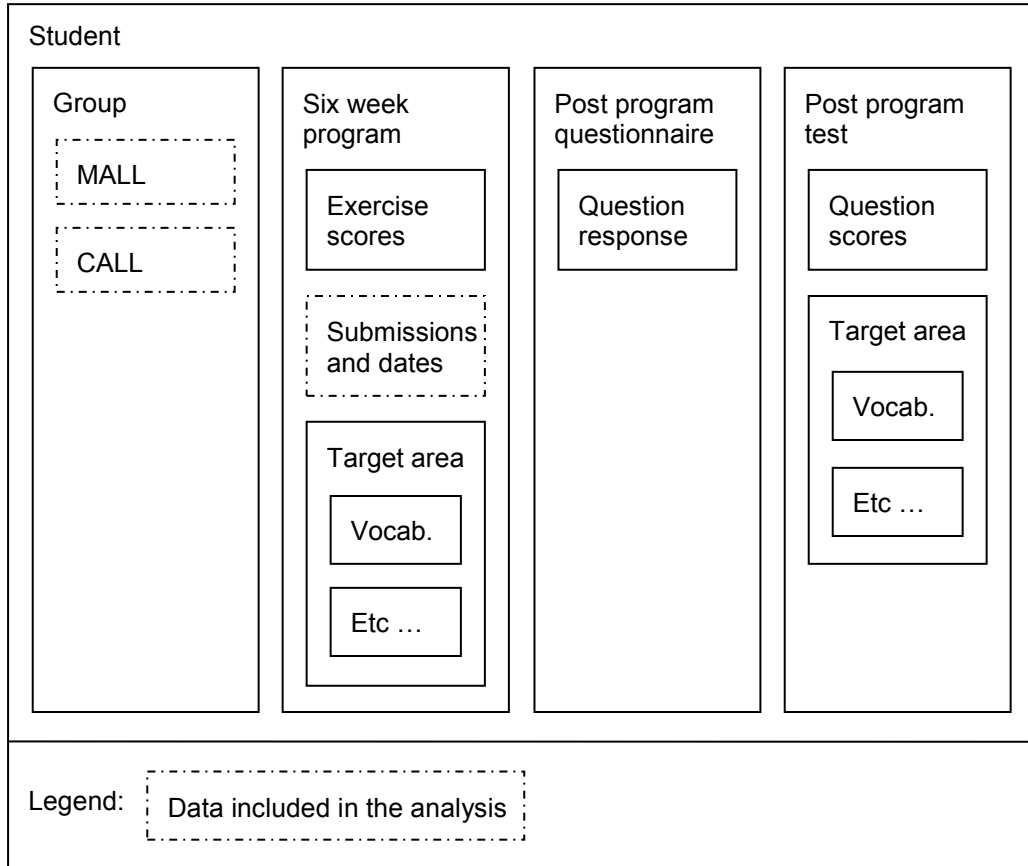

Figure 2 Data considered in Tests 1 and 2 of MALL's suitability for distributed study

The SQL query used to extract this data follows:

select case when s.mobile is null then 'call' else 'mall' end as studentgroup, (count(distinct(i.day)) / count(*)) as num from incoming i, exercise e, student s where i.student_id = s.id and e.id = i.exercise_id group by i.student_id;

The second test identified the percentage of exercises which were submitted on the day they were delivered or scheduled. Thus by analysing the same data as outlined in Figure 2, the study was able to determine how much of the students'

study was undertaken on schedule with the course structure. The SQL query used to extract this data follows:

select case when s.mobile is null then 'call' else 'mall' end as studentgroup, ((select count(*) from incoming i2, exercise e2 where i2.day = e2.day and i2.exercise_id = e2.id and i2.student_id = i.student_id group by i2.student_id) / count(*)) as num from incoming i, exercise e, student s where i.student_id = s.id and e.id = i.exercise_id group by i.student_id;

Both tests' results were subject to an independent t-test in order to determine if they are statistically significant.

4.7.2 Enhancement of retention

In order to evaluate the validity of the hypothesis that MALL enhances students' language retention, this study considered the difference between the two groups' overall six week program and post-program test results. This study deemed that poorer post-program test results indicate loss of knowledge. The SQL query used to extract this data follows:

select case when s.mobile is null then 'call' else 'mall' end as studentgroup, avg(a.score) - avg(i.score) as num from student s left join answer a on a.student_id = s.id left join question q on q.id = a.question_id left join incoming i on i.student_id = s.id left join exercise e on e.id = i.exercise_id where q.targetarea_id is not null and s.id in (select a.student_id from answer a, question q where q.targetarea_id is not null and a.question_id = q.id) group by a.student_id;

Figure 3 illustrates the quantitative data considered in finding the difference between the six week program exercise and post-program test scores.
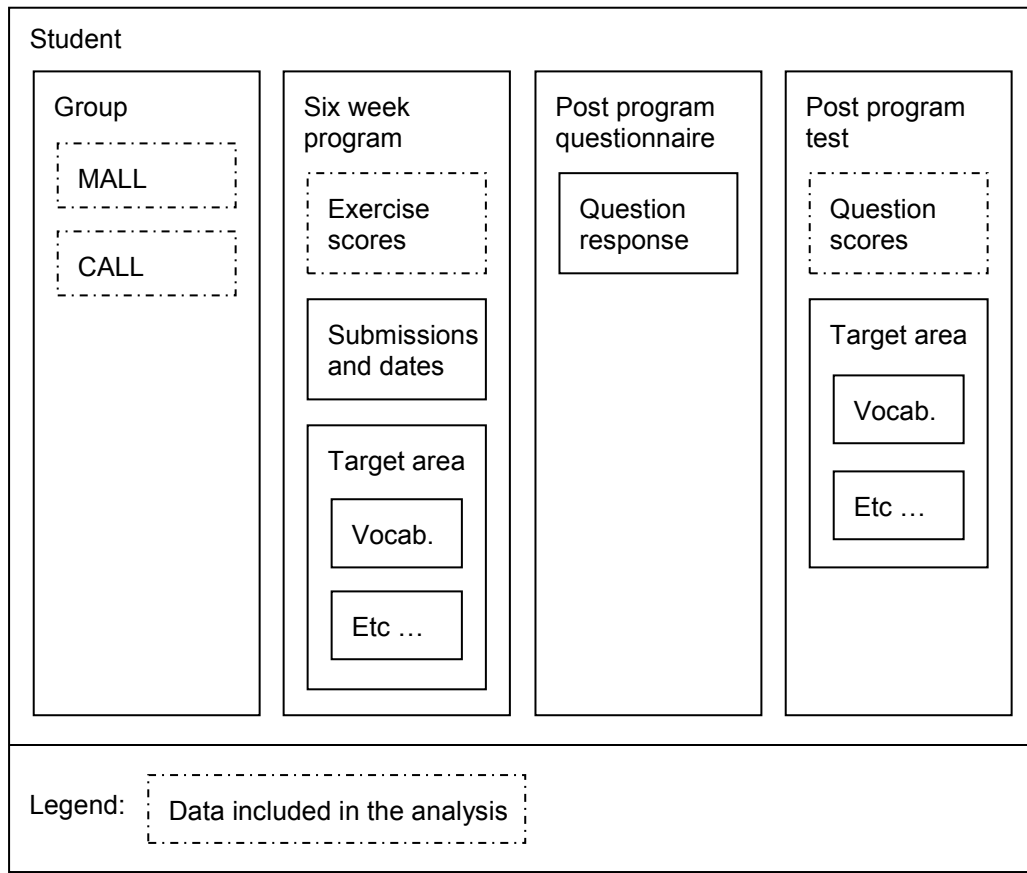
Figure 3 Quantitative data considered in retention test

The retention test was subject to an independent t-test in order to determine if the variance in students' results are statistically significant.

4.7.3   Enhancement of vocabulary acquisition

This study examined the validity of the hypothesis that MALL enhances vocabulary acquisition in particular by constricting the aforementioned retention test to the specific language target area of vocabulary acquisition and comparing these results to the overall retention test results. The SQL query used to extract this data follows:

select case when s.mobile is null then 'call' else 'mall' end as studentgroup, avg(a.score) - avg(i.score) as num from student s left join

answer a on a.student_id = s.id left join question q on q.id = a.question_id left join incoming i on i.student_id = s.id left join exercise e on e.id = i.exercise_id where q.targetarea_id = 11 and s.id in (select a.student_id from answer a, question q where q.targetarea_id = 11 and a.question_id = q.id) group by a.student_id;

The origin of the data considered in this test is illustrated in Figure 4.
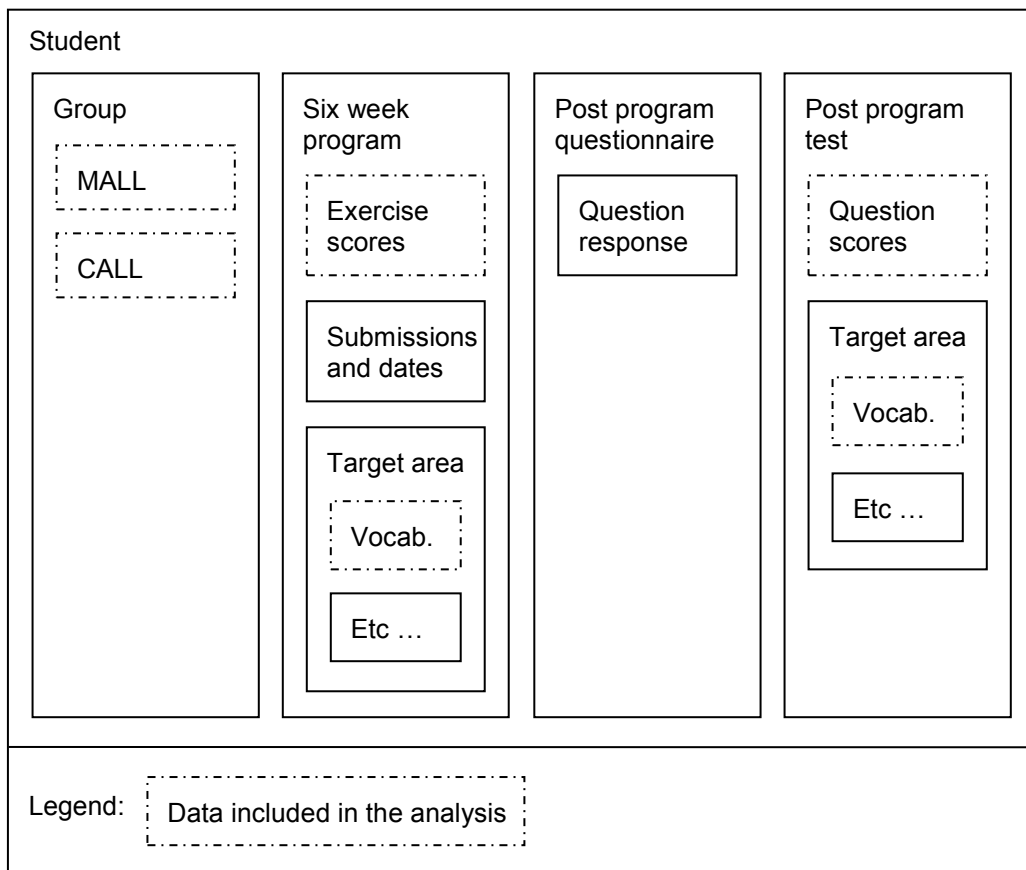

Figure 4 Quantitative data considered in the vocabulary acquisition test

4.7.4 Increase of student motivation

Student motivation does not reveal itself in tangible form and as such it is difficult to identify or define. This study examined students' motivation by analysing the quantitative student data which it was likely to affect, as well as

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the qualitative student data within which the students noted their motivation levels by the means of self analysis. This study considered the number of submitted exercises to correlate to the amount of students' study and as such indicate the levels of student motivation. Figure 5 illustrates the quantitative data considered in finding this correlation.
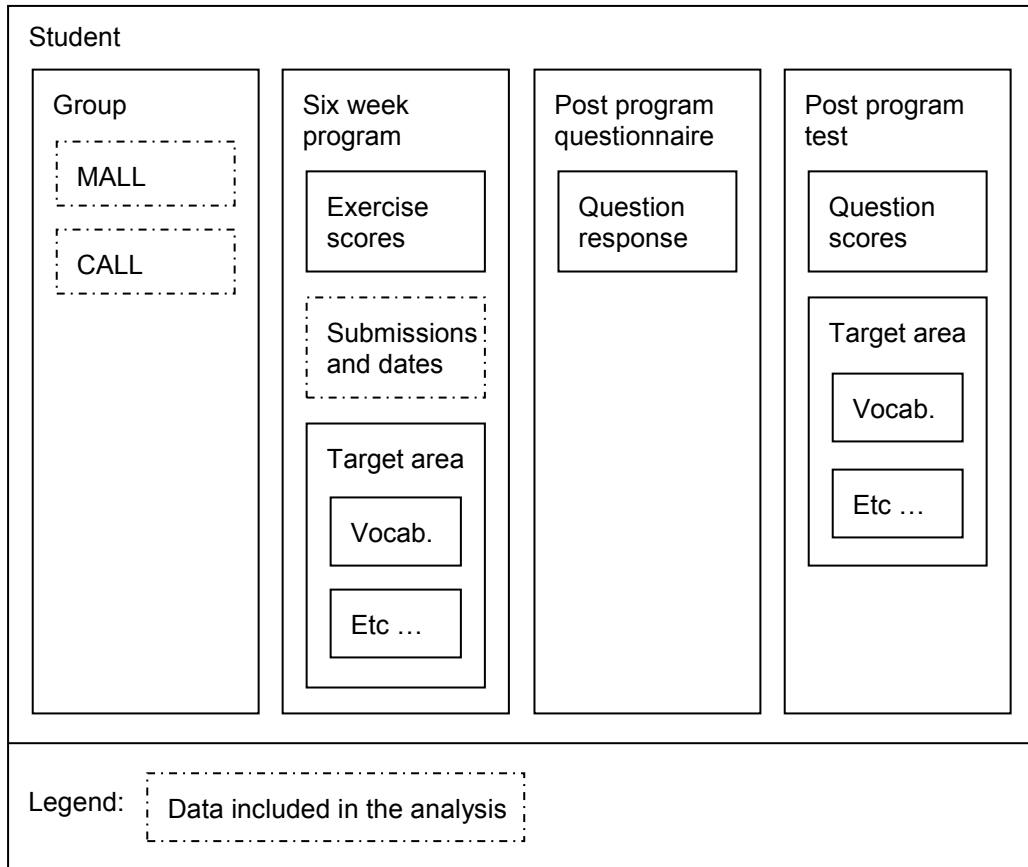

Figure 5 Data segments assumed to be affected by student motivation

As illustrated in figure 5 above, this study assessed the level of both groups' participation by ascertaining the number of submitted exercises for each group member. The SQL query used to extract this data follows:

> *select case when s.mobile is null then 'call' else 'mall' end as studentgroup, count(*) as num from incoming i, student s where s.id = i.student_id group by s.id;*

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As part of the analysis of student motivation, qualitative data illustrated in Figure 6 was also considered. Specifically, questions five (closed) and twenty (open) from the post-program questionnaire were related to motivation.
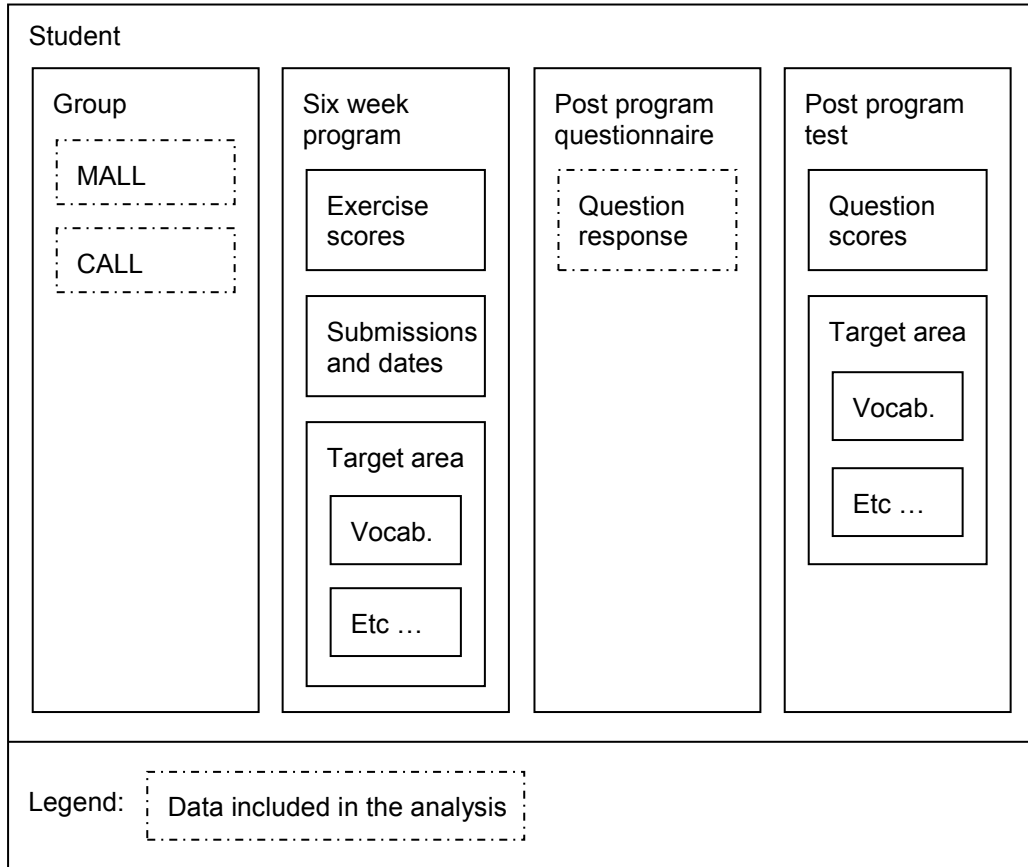

Figure 6 Qualitative data related to motivation

The SQL queries used to extract this data follow:

select case when s.mobile is null then 'call' else 'mall' end as studentgroup, a.response from answer a, student s where a.student_id = s.id and a.question_id = 5;

select case when s.mobile is null then 'call' else 'mall' end as studentgroup, a.response from answer a, student s where a.student_id = s.id and a.question_id = 20;

5 System Architecture

To facilitate the research process of this study an adequate software solution was required. The solution had to be versatile in the sense that it allows for initial provision of language study material as well as amendment of such material in case of scope change. In order to support this study's long research life span, the software solution that drives it had to be designed to accumulate research data throughout this time, and allow for addition, amendment, or removal of language target areas, exercises, and post-program questionnaires or tests. Furthermore, due to the nature of the study, the software solution had to be accessible through personal computers as well as regular mobile phones.

In order to facilitate the requirements of the study, the Monash MALL System was developed with flexibility foremost on the agenda. Implemented with typical database-driven server-side architecture, the Monash MALL system allows for accumulation and manipulation of data at one central data repository. Such a design allows all users (tutor as well as CALL and MALL students) admission to the course material, however through separate interfaces and moderated access. While MALL students access the exercises via their mobile phones, CALL students access the same exercises through a typical web based interface. Tutors also provision all exercises and assessments through a separate web based interface. Figure 7 illustrates this scenario.
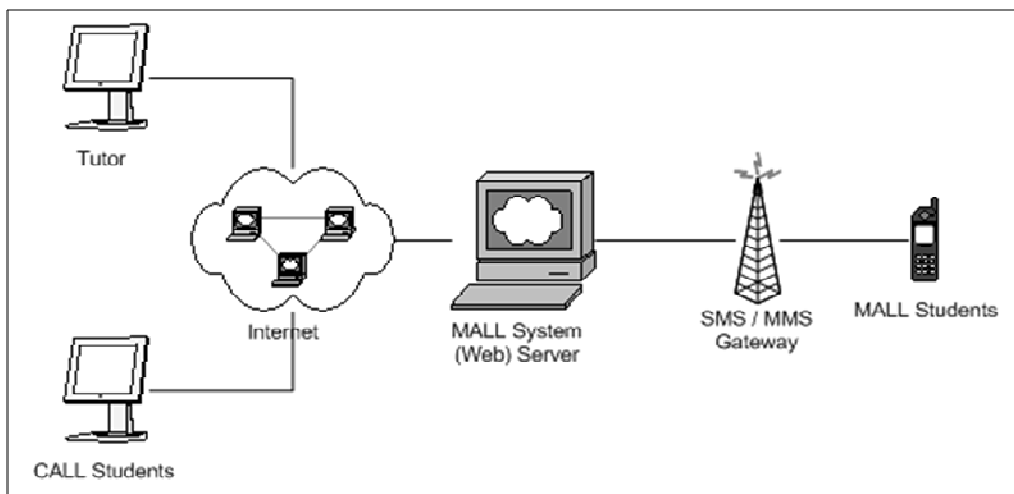

Figure 7 Monash MALL System architecture

The Monash MALL system is hosted on a typical WAMP (Windows, Apache, MySQL, and PHP) server. Aside from the MALL server's four core software components (Apache, MySQL, PHP, and the NowSMS Gateway), this study also utilised phpMyAdmin and SPSS for post-program analytical purposes. The Apache (HTTP Server) software serves the Monash MALL System web pages to the visitors (tutors or students) by querying the PHP server software for appropriate output. The NowSMS gateway software also queries the PHP software for appropriate SMS or MMS responses for the MALL students. In other words, both Apache and the NowSMS gateway act as intermediaries between the Monash MALL System's PHP engine and its users as they provide access to the system from suitable devices (computers and mobile phones). The PHP software provides for logic as well as access to the MySQL relational database via SQL (Simple Query Language). The MySQL software therefore serves the Monash MALL System's data repository to its users via PHP, Apache, and the NowSMS gateway. MySQL also provides access to the MALL database via third party software packages such as phpMyAdmin, which was used in this study to extract quantitative data for testing by SPSS (Statistical Package for the Social Sciences). Figure 8 illustrates the data flow between the MALL server software, while Figure 9 displays the Monash MALL database structure.
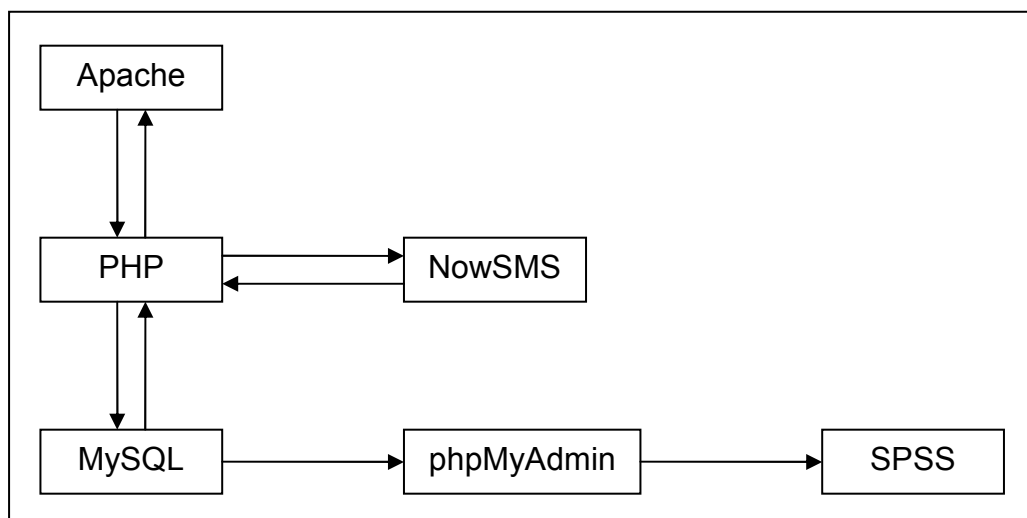

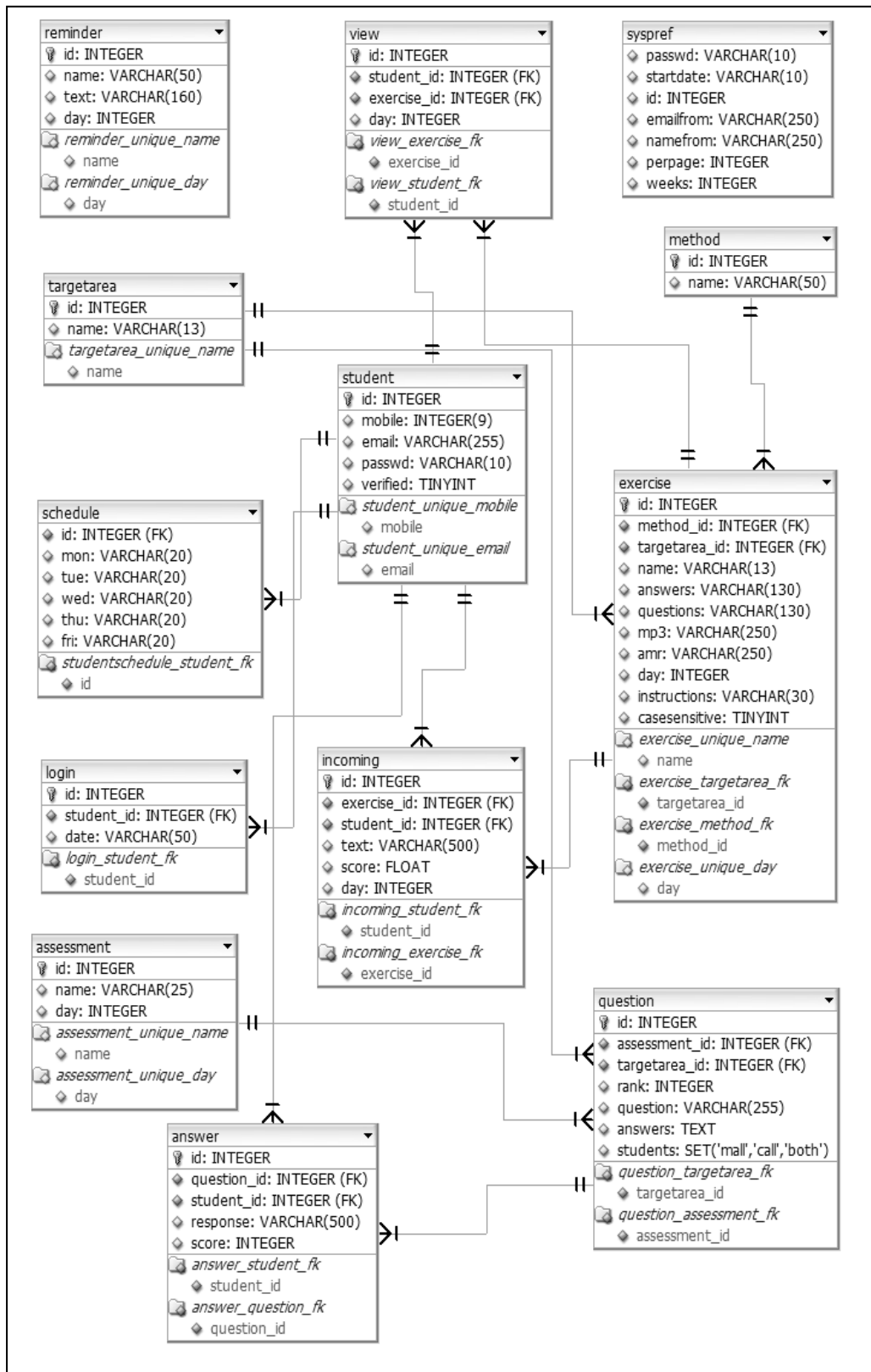*Figure 8* Data flow between Monash MALL server software

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Figure 9 Monash MALL System database structure

5.1   System functionality

The Monash MALL System functionality has been outlined in detail below:

- Tutor
  - Creation, amendment, and removal of target areas

    The tutor has the ability to create, edit the name of, or remove target areas at any point during the research lifespan. This is of paramount importance as it provides the tutor with the ability to include new target areas in case of research scope expansion.

  - Creation, amendment, and removal of exercises

    The tutor has the ability to create, edit, or remove exercises at any point during the research lifespan. This is also of great importance as it provides the tutor with the opportunity to add new exercises in case of research scope change, reassign exercises to more appropriate target areas, as well as edit exercises in case of discovered errata. Furthermore, this functionality allows the tutor to reschedule exercises for an earlier or later time in case of unexpectedly heavy student workloads.

  - Creation, amendment, and removal of reminders

    The tutor has the ability to create, edit, or remove student reminders for the purpose of sending assignment due dates or events of interest via email for CALL and SMS for MALL students at any time during the research lifespan.

  - Creation, amendment, and removal of assessments

    The tutor has the ability to create, edit, or remove assessments such as questionnaires or revision tests at any point during the research lifespan. This is also directly linked to the possibility of scope change and revision of target areas and exercises. This functionality also provides the tutor with the opportunity to add multiple assessments, for instance satisfaction questionnaires or long-term retention tests. Furthermore, tutors have the ability to

schedule assessments for a date they see as appropriate for an assessment activity (i.e. the post-program questionnaire was only available after the six week program completion).

- Creation, amendment, and removal of assessment questions

  The tutor has the ability to create, edit, or remove assessment questions at any time during the research lifespan, therefore allowing for addition or amendment to assessment content in case of scope change.

- Removal of participants

  The tutor has the ability to remove any active or inactive participant from the database in case the participant is deemed inappropriate for the purpose of the study (i.e. a native French speaker) at any time during the research lifespan. This allows for removal of all related student submission data without affecting the accumulated contribution of other students.

- Amendment of global system settings

  The tutor has the ability to amend global system settings at any time during the research lifespan. Global settings include details such as the global tutor (administrator) password, email from which to send any CALL student reminders, course duration (in weeks), as well as the course start date (the date on which to begin delivering the exercises to MALL students).

- MALL Students

  - Registration

    MALL students can register via an online subscription form. MALL student accounts are only functional following successful completion of the account activation process, where the students reply to an automatically generated Monash MALL system SMS message from their mobile phone and therefore confirm their intent to participate in the study.

  - Submission of exercises

MALL students can submit exercises at any time after exercise delivery. This functionality provides students with the opportunity to submit an exercise at a later time in case they are busy at the time an exercise is scheduled. MALL (unlike CALL) students cannot review their submitted exercises or feedback unless they have stored the relevant Monash MALL System MMS feedback messages on their mobile phone.

- o Completion of assessments (web)

  Provided they are logged in with their mobile phone and password credentials, MALL students have the ability to complete assessments (questionnaires and tests) via the web based interface. The assessments are only available for completion from the day they are scheduled.

- o Amendment of password (web)

  Provided they are logged in with their mobile phone and password credentials, MALL students have the ability to change their account password at any time during the research lifespan.

- o Amendment of exercise delivery times (web)

  Provided they are logged in with their mobile phone and password credentials, MALL students have the ability to change their preferred daily exercise delivery times at any time during the research lifespan.

- CALL Students

  - o Registration

    CALL students can register via an online subscription form. CALL student accounts are only functional following successful completion of the account activation process, where the students follow an automatically generated Monash MALL System URL (web address) from their account activation email and therefore confirm their intent to participate in the study.

  - o Submission and review of exercises

Provided they are logged in with their email address and password credentials, CALL students have the ability to complete exercises as well as review feedback via the web based interface at any time during the research lifespan. While all exercises are scheduled for a specific day, CALL (unlike MALL) students can view and complete exercises prior to their schedule. This study considered that restricting access to resources (in this case exercises) for CALL students and forcing them to follow a specific schedule is biased in the sense that computer users would be used to the convenience of accessing information at any time and therefore disgruntled in any other case. This study judged that expecting computer users to allocate workstation time each day for the completion of scheduled exercises is demoralising and unfair considering general capabilities and usage trends of computers today.

o Completion of assessments

Provided they are logged in with their email address and password credentials, CALL students have the ability to complete assessments (questionnaires and tests) via the web based interface. The assessments are only available for completion from the day they are scheduled.

o Amendment of password

Provided they are logged in with their email address and password credentials, CALL students have the ability to change their account password at any time during the research lifespan.

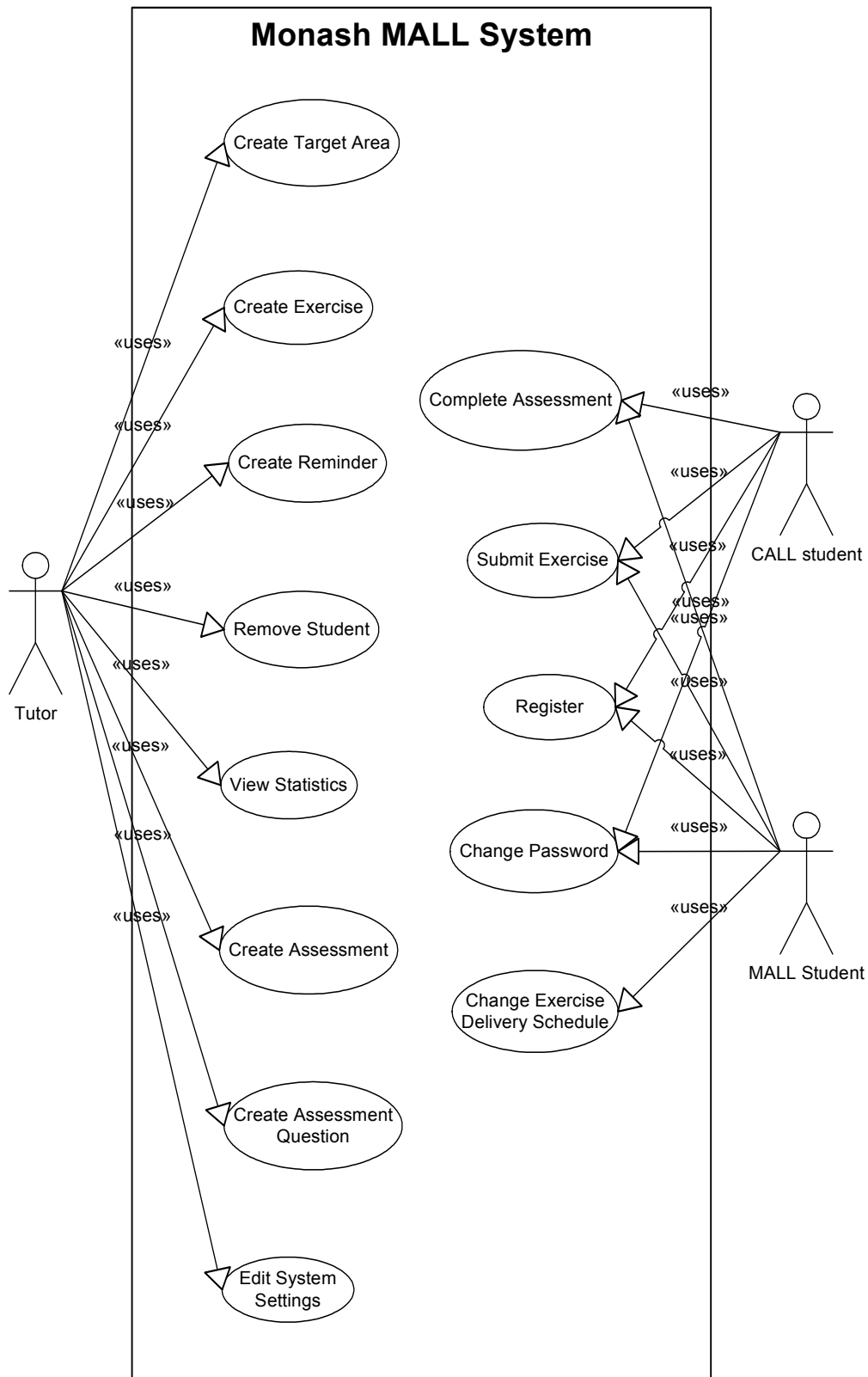Figure 10 provides the use case diagram for the functionalities outlined above.

Figure 10 Monash MALL System use case diagram

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5.2 System interfaces

The Monash MALL system applies a number of web interfaces for the purpose of providing access to relevant functionality and information for the system's users; tutor (administrator), CALL students, and MALL students. The system comprises of three such interfaces, as well as a mobile phone communication mechanism (tutor interface, CALL student interface, and MALL student interface). The interfaces are accessed via the login page as illustrated in Figure 11 below.

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Please enter your login details:

If you have forgotten your password, type in your user login (email address or mobile phone number) and tick the "Forgot password" checkbox. Click submit to dispatch the password to your email address / mobile phone number.

User login:

Password:

Forgot password: ☐   Submit

If you do not have an account please subscribe for either: mobile phone account | web based account

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Figure 11 Monash MALL System login page

5.2.1 Tutor interface

The tutor interface serves as a tool for the entire Monash MALL system administration. The interface provides the aforementioned functionalities by separating them into eight sections or pages. The sections are designed in a consistent manner, keeping the same styles and usability methods. The eight sections or pages are: target area, exercise, reminder, assessment, question, student, statistics, and settings. Figure 12 illustrates the pages as part of a simple sitemap.
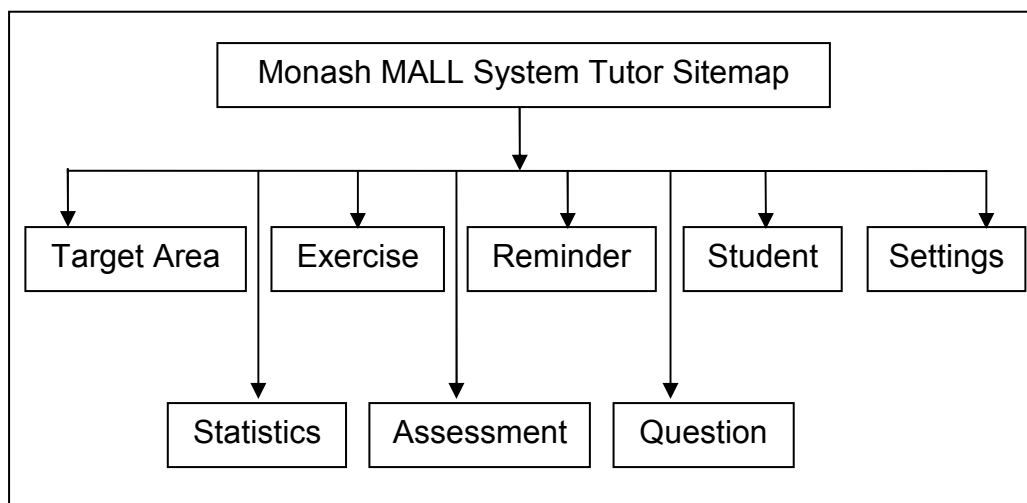
Figure 12 Tutor interface sitemap

As illustrated in Figure 13, the information or items along with relevant actions or functions are displayed in tabular fashion. A search field is also provided allowing the tutor to filter the information or find a specific record. Items can also be ordered in alphabetical order by a specific column, simply by clicking the column heading link. Furthermore, all pages that list information also provide the tutor with a brief 'please note' paragraph, outlining the actions available on the current page as well as the consequence of using these (i.e. clicking the delete action).

Figure 13 Tutor interface target area listing

Figure 14 illustrates a scenario where a considerable amount of information is presented to the tutor. It is in this situation that the column sorting and search filter functionalities are the most useful (i.e. clicking the target area column link will reorder all items by grouping them according to the target area they are assigned to).

name	day	targetarea	method	answers	questions	action
Ex S2/D1	1	Numbers	Every second line	dix 10 quatre 4 seize ...	dix @ quatre @ seize ...	edit | delete
Ex S2/D2	2	Def. articles	Each line	la bibliothèque l'ami l ...	bibliothèque ami travau ...	edit | delete
Ex S2/D3	3	Ind. articles	Each line	des livres un étudiant ...	@ livres @ étudiant @ c ...	edit | delete
Ex S2/D4	4	Vocabulary	Every second line	a whiteboard le tableau ...	a whiteboard @ a woman ...	edit | delete
Ex S2/D5	5	Translation	Every second line	How are you? Comment all ...	How are you? @ What is ...	edit | delete
Ex S3/D1	6	Vocabulary	Every second line	the man l'homme a libra ...	the man @ a library @ ...	edit | delete
Ex S3/D2	7	Numbers	Every second line	22 vingt-deux 31 trent ...	22 @ 31 @ 63 @ 81 ...	edit | delete
Ex S3/D3	8	Vocabulary	Every second line	Monday lundi Wednesday ...	Monday @ Wednesday @ ...	edit | delete
Ex S3/D4	9	Conjugation	Each line	nous aimons vous regarde ...	nous aim@ vous regard@ ...	edit | delete
Ex S3/D5	10	Negation	Each line	Je n'aime pas le vin. Tu ...	J'aime le vin. Tu parles ...	edit | delete
Ex S4/D1	11	Negation	Every second line	mange Il rien ne Il ne m ...	mange Il rien ne @ jama ...	edit | delete
Ex S4/D2	12	Negation	Every second line	aiment personne Ils n' I ...	aiment personne Ils n' @ ...	edit | delete
Ex S4/D3	13	Translation	Every second line	Italians like coffee. Le ...	Italians like coffee. @ ...	edit | delete
Ex S4/D4	14	Conjugation	Each line	Vous êtes riches On est ...	Vous @ riches On @ genti ...	edit | delete
Ex S4/D5	15	Adjs agreem.	Every second line	beau belle heureux heu ...	beau @ heureux @ blan ...	edit | delete
Ex S5/D1	16	Translation	Every second line	I always eat a pizza. Je ...	I always eat a pizza. @ ...	edit | delete

Figure 14 Tutor interface exercise listing

Figures 15 and 16 illustrate Monash MALL system's amendment forms. All data entry forms across the interface are consistent, comprising of input labels, input fields, and relevant help icons. Hovering over a help icon provides the tutor with input guidance or instructions for a specific input field. Clicking a calendar icon next to a date field provides the tutor with a calendar, allowing for convenient selecting of dates. Furthermore, considering that standard keyboards do not allow for convenient entry of international characters, a virtual Javascript keyboard has been provided to facilitate the entry of characters from the French alphabet. Clicking the keyboard icon will display the international keyboard beneath the input field it is associated with.

Figure 15 Tutor interface settings amendment form

Figure 16 Tutor interface exercise amendment form

Figure 16 also illustrates the system's ability to guide user input in regards to the remaining number of characters, as in case of exercises, the input fields do not allow entry of more than 160 characters (single SMS character limit).

5.2.2 MALL student interface

The MALL student interface provides the MALL students with the ability to complete post-program assessments as well as change their password or daily exercise delivery times. The interface provides the aforementioned functionalities by separating them into three sections or pages. The sections are designed in a consistent manner, keeping the same styles and usability methods. The three sections or pages are assessment, schedule, and password. Figure 17 illustrates the pages as part of a simple sitemap.
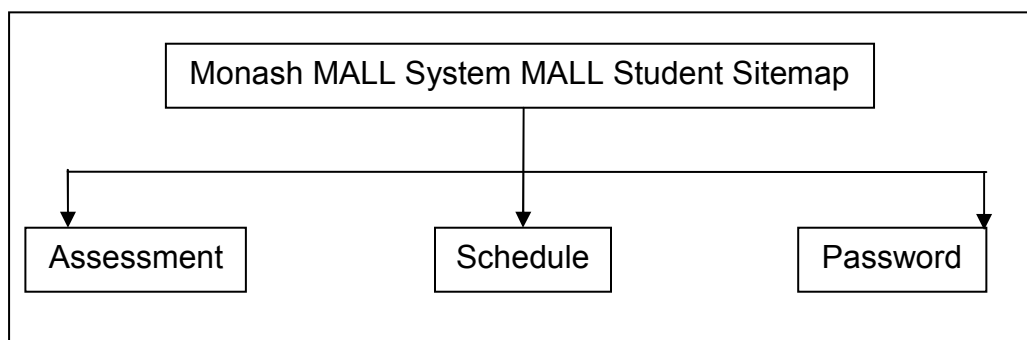
Figure 17 MALL student interface sitemap

Figure 18 illustrates MALL students' exercise schedule amendment form.

Figure 18 MALL student exercise schedule amendment form

Figure 19 illustrates the MALL students' assessment form (in this case the post-program test).

Complete Assessment

> Please take a few moments and complete the questions listed below. We would like to use this opportunity to thank you for your time. We hope you have enjoyed your learning experience.

Write this number in French: 16

Write this number in French: 81

Write this number in French: 74

Write in French: the computer

Write in French: the bookstore

Write in French: the library

Add correct verb ending: Nous mang(er)

Figure 19 MALL student assessment form

Figure 20 illustrates the MALL students' view of a delivered exercise, as well as submitted exercise feedback.

Ex S2/D1: Change @ to a digit – eg. 22

dix
@
quatre
@

✓	⇔	✗
1	2	3
4	5	6
7	8	9
*	0	#

Ex S2/D1 Feedback – Your submission was processed and your score was: 50%
Your responses:
10
5
Correct responses:
10
4
<< Audio feedback >>

✓	⇔	✗

Figure 20 MALL student exercise and feedback view

5.2.3 CALL student interface

The CALL student interface provides the CALL students with the ability to complete post-program assessments, submit exercises, review exercise feedback, and change their password. The interface provides the aforementioned functionalities by separating them into three sections or pages. The sections are designed in a consistent manner, keeping the same styles and usability methods. The three sections or pages are assessment, exercise, and password. Figure 21 illustrates the pages as part of a simple sitemap.
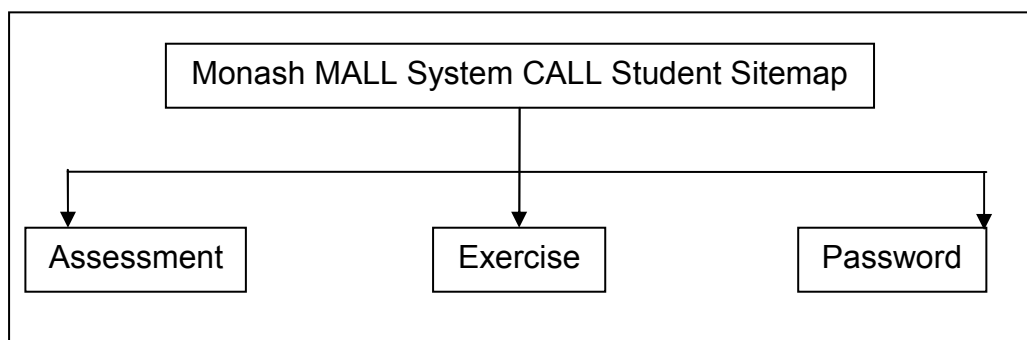
Figure 21 CALL student interface sitemap

While the assessment and change of password pages are identical to that of MALL students' interface, Figure 22 illustrates the CALL students' exercise submission form which resembles the MALL students' view from the pedagogical perspective.

Figure 22 CALL students interface exercise view

Figure 23 illustrates the CALL students' view of exercise feedback.

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                                    assessment | exercise | password
                                    attempt exercise | review exercise

Review Exercise

☛ The following feedback was generated at time of exercise submission. You cannot
    attempt the same exercise again.

Ex S4/D5: Write feminine form of adj.

Your result for this exercise was: correct

Question(s):	Your answer(s):	Correct answer(s):
beau	belle	belle
heureux	heureuse	heureuse
blanc	blanche	blanche
nouveau	nouvelle	nouvelle
italien	italienne	italienne

Pronunciation (audio) feedback: click here

To go back: click here

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Figure 23 CALL student interface exercise feedback review

6 Results

This chapter presents the results derived from quantitative data. These results are considered alongside qualitative data in the Discussion chapter of this thesis.

6.1 Participation overview

Ten students participated in the study's six week program, while five completed the post-program questionnaire (three CALL students and two MALL students) and only three completed the post-program test (two CALL students and one MALL student). Both groups of students submitted exactly half of the six week program exercises (seventy five exercise submissions per group), while their average scores were also very similar, with the MALL group achieving fifty eight and the CALL group fifty five percent of correct responses.

Table 3 Mean scores by group

	group	N	Mean	Std. Deviation	Std. Error Mean
scores	call	75	.55309524	.367401043	.042423818
	mall	75	.57865081	.381005228	.043994694

Table 3 outlines the two groups' average (mean) scores, while Table 4 provides the results of the independent samples test. While the mean scores at first glance indicate that the MALL group performed marginally better, Table 4 clearly illustrates that such an assumption fails to reject the null hypothesis, which for the purpose of this test states that both MALL and CALL students are equally capable (t = -.418, df = 148, p > .05).

Table 4 Group scores independent samples test

| | | scores | |
		Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F	.035	
	Sig.	.853	
t-test for Equality of Means	t	-.418	-.418
	df	148	147.805
	Sig. (2-tailed)	.676	.676
	Mean Difference	-.025555573	-.025555573
	Std. Error Difference	.061117211	.061117211
	95% Confidence Interval of the Difference Lower	-.146330669	-.146331984
	Upper	.095219522	.095220837

6.2 Facilitation of distributed study

Two tests provided convincing results in regards to MALL's ability to facilitate distributed study. Table 5 outlines the percentage of exercises that were submitted on different days throughout the six week program by each group's students.

Table 5 Percentage of distributed study

	group	N	Mean	Std. Deviation	Std. Error Mean
percentage	call	5	.422460	.2201109	.0984366
	mall	5	.850380	.2598090	.1161901

The overwhelming difference in percentage of distributed study (eighty five percent for MALL and forty two percent for CALL students) is also supported by evidence in Table 6, which outlines the results of the independent samples

test. The test results are statistically significant (t = -2.81, df = 8, p < .05) and as such this study rejects the null hypothesis where both groups of students complete the same amount of distributed study.

Table 6 Distributed study independent samples test

			percentage	
			Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F		.015	
	Sig.		.907	
t-test for Equality of Means	t		-2.810	-2.810
	df		8	7.790
	Sig. (2-tailed)		.023	.023
	Mean Difference		-.4279200	-.4279200
	Std. Error Difference		.1522823	.1522823
	95% Confidence Interval of the Difference	Lower	-.7790837	-.7807408
		Upper	-.0767563	-.0750992

The evidence is further supported by Tables 7 and 8, which outline the percentage of exercises each of the two group's students submitted on schedule and the independent samples test results respectively. MALL students submitted seventy two percent of exercises on schedule, while CALL students submitted only twenty percent. In accordance with Table 8 t-test results, the null hypothesis has been rejected (t = -2.337, df = 8, p < .05).

Table 7 Percentage of exercises submitted on time

	group	N	Mean	Std. Deviation	Std. Error Mean
Number	call	5	.206360	.2619333	.1171401
	mall	5	.720380	.4163823	.1862118

Table 8 Timely submissions independent samples test

		Timely submissions	
		Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F	.565	
	Sig.	.474	
t-test for Equality of Means	t	-2.337	-2.337
	df	8	6.737
	Sig. (2-tailed)	.048	.054
	Mean Difference	-.5140200	-.5140200
	Std. Error Difference	.2199924	.2199924
	95% Confidence Interval of the Difference Lower	-1.0213234	-1.0383615
	Upper	-.0067166	.0103215

6.3   Enhancement of retention

Table 9 outlines long term retention results, indicating a loss of knowledge for CALL students at the rate of seven percent, and a gain in knowledge and therefore better retention for MALL students at twenty two percent. These results are clearly inconclusive however due to the small number of submitted post-program tests, with only one MALL and two CALL students completing the assessment. It is highly likely that the result is merely the consequence of student sample discrepancies as outlined in Table 10, hence the failure to reject the null hypothesis ($t = -3.298$, $df = 1$, $p > .05$).

Table 9 Enhancement of retention test group statistics

	group	N	Mean	Std. Deviation	Std. Error Mean
improvement	call	2	-.0655	.07100	.05021
	mall	1	.2213	.	.

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Table 10 Enhancement of retention test independent samples test

		improvement	
		Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F	.	
	Sig.	.	
t-test for Equality of Means	t	-3.298	.
	df	1	.
	Sig. (2-tailed)	.187	.
	Mean Difference	-.28678	-.28678
	Std. Error Difference	.08696	.
	95% Confidence Interval of the Difference — Lower	-1.39175	.
	95% Confidence Interval of the Difference — Upper	.81819	.

6.4 Enhancement of vocabulary acquisition

Table 11 outlines vocabulary acquisition (retention) results, indicating a loss of knowledge for CALL students at the rate of seven percent (consistent with overall retention loss outlined above), and a gain in knowledge and therefore better retention for MALL students at thirty seven percent (higher than the overall retention results). As with the overall retention test outlined above, these results are clearly inconclusive due to the small number of post-program test submissions. Table 10 outlines the t-test results, indicating a high probability of the null hypothesis (t = -.597, df = 1, p > .05).

Table 11 Enhancement of vocabulary acquisition group statistics

	group	N	Mean	Std. Deviation	Std. Error Mean
V2	call	2	-.065	.5948	.4206
	mall	1	.369	.	.

Table 12 Enhancement of vocabulary acquisition independent samples test

			V2	
			Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F		.	
	Sig.		.	
t-test for Equality of Means	t		-.597	.
	df		1	.
	Sig. (2-tailed)		.657	.
	Mean Difference		-.4349	-.4349
	Std. Error Difference		.7285	.
	95% Confidence Interval of the Difference	Lower	-9.6909	.
		Upper	8.8211	.

6.5   Increase of student motivation

Both groups of students submitted seventy five exercises, indicating identical levels of motivation. Without the need for independent samples tests, it can be safely concluded that the null hypothesis cannot be rejected in this case. In their self analysis however, two CALL students disagreed with the statement that the Monash MALL system had a positive impact on their motivation, while the third deemed to be neutral on the subject. On the other hand, no negative responses were received from the two MALL students who completed the same questionnaire, one noting a neutral opinion, while the other strongly agreed with the statement.

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7 Discussion

This chapter considers qualitative data along with the generated quantitative data results and outlines any bias that may have affected the study's results thus far. This study assumes that the reasons behind the lack of post-program questionnaire and test submissions are directly related to students' exam preparation. Both assessments were scheduled in the weeks following the six week program conclusion and therefore clashed with the students' exam preparation time. While qualitative data is scarce for the reasons outlined, this chapter serves as an analysis strategy which can be reapplied as the study's data repository grows over several semesters.

7.1 Facilitation of distributed study

While the results derived from quantitative data appear to strongly support the hypothesis that MALL facilitates distributed study, qualitative data is also encouraging. For instance, the following is an answer from one of the MALL students outlining the reasons behind the student's choosing of the MALL system (rather than the CALL interface).

> *"Because I wanted to have to answer the questions off the top of my head, rather than at my desk with all my notes around"*

Another student noted the following:

> *"Revision is more useful when I'm out and about - I could always do the study myself if I was by a computer"*

The two responses above indicate a level of enthusiasm about studying while away from the computer. The hypothesis is also supported by the following

statement from one of the MALL students in regards to his/her favourite aspect of the MALL system:

> *"It kept me thinking about French, even if only for a few minutes, everyday. Whether or not I had classes or was doing homework that day or whatever, I had to think about French for just a moment at least"*

The second MALL student also provided a similar response, noting the following about their experience:

> *"Simple to use, jogs my memory and I can answer at a time convenient to me"*

Considering the exercise submission trends throughout the six week program, as well as the general enthusiasm by the two MALL students who had completed the post program questionnaire, the study thus far indicates that MALL is well suited for distributed study within the beginning language learner scenario. Furthermore, this study also indicates that MALL is well suited for curriculums where timely completion of tasks or exercises is of particular importance.

7.2   Enhancement of retention and vocabulary acquisition

Only one MALL student and two CALL students completed the post-program assessment. The MALL student, however, completed the assessment two weeks after the CALL students. While this may indicate a disadvantage for the MALL student, this study views this fact as a clear bias and advantage instead. The study assumes that the MALL student would have had the opportunity to better his/her knowledge throughout a longer exam preparation time, in effect disqualifying any credibility in regards to MALL contribution to retention alone. This study failed to reject the enhancement of retention null hypothesis

as outlined in the Results chapter of this thesis. The study also failed to reject the vocabulary acquisition null hypothesis. Combined with the fact that considerable bias may have affected the generated results, this study deems that the results of both retention tests are therefore inconclusive.

7.3   Increase of student motivation

While MALL students' post-program questionnaire responses were generally more positive than that of the CALL students', the overall findings by this study in regards to student motivation are inconclusive due to the lack of students' post-program participation. The study also failed to reject the motivation null hypothesis in the Results chapter of this thesis. At this stage, it appears that no real difference in motivation exists, as this assumption is strongly supported by the students' participation data outlined in the Results chapter, which indicates that both groups of students were evenly involved in their studies. These results go in hand with previous research on motivation in language studies in general (Noels 2001, Deci and Ryan 1995), where students' initial reasons behind their involvement with the language are generally viewed as the primary influential factors in student motivation. The following encouraging response from one of the MALL students indicates that perhaps the MALL field should be researched in greater depth, at least with the aim to facilitate a learning experience for those who are well accustomed with their mobile phones:

> *"I feel the program could only have had a positive impact on my learning. As mentioned above, I think the fact that I was made to think everyday about the things I was learning in French was very beneficial. It was quick and easy and not assessed, so I didn't feel too much pressure. The instantaneous feedback also helped me not to make any mistakes I did make in the texts in my classwork. I feel strongly that this was a positive influence on my learning of the language."*

7.4 Lessons learnt

As predicted in the Literature review chapter of this thesis, a number of approach issues were encountered in the system development process of the Monash MALL software. As a result of good communication and careful analysis of the system requirements by researchers from technological as well as educational background a number of system design issues were avoided. One such example was the MALL students' initial (beta) interface, which was recognised by the Monash MALL tutor to be inappropriate from a pedagogical perspective. The interface provided one exercise per line, requiring the students to remove the question before inputting the answer. This was quickly identified as an inconvenience and rectified prior to the six week program launch. Another example involves a miscommunication between the tutor and the developer, resulting in some exercises relating to a number of target areas. Such exercises were typically of the translation type, however required the grammatical knowledge of one or more language target areas also. The Monash MALL system allows each exercise to be related to a single target area only, therefore a number of exercises were assigned to the translation target area. As a result, some target areas present in the six week program did not reappear in the post-program test, but were instead tested as part of the translation target area. Fortunately this issue did not have much of an impact on the overall results considering the poor post-program participation.

From the technological perspective alone, this study encountered a student subscription challenge close to the six week program commencement. It became evident that while students were signing up for the CALL interface they had not been activating their accounts. Interestingly enough, CALL subscribers with non-Monash email addresses had no such issues. It was soon discovered that the Monash webmail interface had been cutting the activation URL short, providing an invalid link to the Monash MALL System's activation page. The issue was soon rectified by a redesign of the activation URL.

From the educational perspective however, it became evident that some of the six week program course scheduling did not completely tie in with that

of the students' enrolled studies. A number of students noted some frustration in regards to this. One CALL student noted that:

"I was having to read ahead of what we were actually doing in class"

Another CALL student also noted in regards to his/her attitude to the six week program suitability that:

"For the first half, it was at the same pace as our studies."

The lessons attained through the system development lifecycle as well as the post-program student feedback allows this study to make appropriate amendments for future research in terms of overall approach, curriculum design, as well as the system development process.

8   Conclusion and Future Research

This study examined previous works relating to MALL, outlined hypotheses it deemed logical, and examined their validity by evaluating the participation and experience of two groups of students; MALL and CALL. In order to achieve this objective, the Monash MALL System was built for the purpose of facilitating the two group's studies via their respective mediums (mobile phones and computers). The MALL students participated in a six week exercise program via the use of their mobile phones and SMS technology, while the CALL students participated in the same program via the use of their personal computers. The system was also built with the functionalities to serve tests and questionnaires, which were used in this study to retrieve students' feedback as well as student retention scores after the study's completion.

Four hypotheses were examined; the first conjectured that MALL will better facilitate distributed study, the second theorised that MALL will enhance student retention, the third assumed an even better retention in vocabulary in particular, while the fourth theorised an increase in MALL students' motivation. Following detailed examination, it was evident that no conclusive evidence exists thus far in regards to an increase in overall or vocabulary specific retention for MALL students, while motivation tests indicated identical motivation levels for both groups of students. In contrast, this study provided clear evidence in regards to MALL's ability to facilitate distributed study, concluding that MALL is very much suitable for beginning language study exercises where distributed and timely study is of particular importance.

Furthermore, this study concludes that only with intensive cooperation between the two poles of research (technological and educational) will the MALL field reach its potential.

8.1   Future research

This study will greatly benefit from an extended research lifespan, one where student participation, feedback, and assessment data is accumulated over time,

and therefore adding to the credibility of findings with a larger student sample. The novelty effect will be minimised with such an approach, allowing for an examination of MALL without the contributing effects of general student excitement for a new technology. Furthermore, application of WAP (Wireless Application Protocol) in MALL may provide for an interesting study with the introduction of further technological possibilities. Such a study may be some distance away however, considering the costs associated with the use of this technology.

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Appendix A: Monash MALL database export

```
--
-- Table structure for table `answer`
--

CREATE TABLE `answer` (
  `id` int(11) NOT NULL auto_increment,
  `question_id` int(11) NOT NULL,
  `student_id` int(11) NOT NULL,
  `response` varchar(500) collate latin1_general_ci default NULL,
  `score` int(10) unsigned default NULL,
  PRIMARY KEY  (`id`),
  KEY `answer_student_fk` (`student_id`),
  KEY `answer_question_fk` (`question_id`)
)  ENGINE=InnoDB    DEFAULT   CHARSET=latin1   COLLATE=latin1_general_ci
AUTO_INCREMENT=458 ;

--
-- Dumping data for table `answer`
--

INSERT INTO `answer` (`id`, `question_id`, `student_id`, `response`, `score`) VALUES
(1, 21, 30, 'obviously, it is no cost needed and easier to type especially for the
accents.', NULL),
(2, 22, 30, 'there is a tiny keyboard to help those who don''t know how to type
accents.', NULL),
(3, 3, 30, 'not really. but I can suggest a confirmation for submitting the answer.',
NULL),
(4, 4, 30, 'Agree', NULL),
(5, 5, 30, 'Neutral', NULL),
(6, 6, 30, 'Agree', NULL),
(7, 7, 30, 'Strongly agree', NULL),
(8, 8, 30, 'Strongly agree', NULL),
(9, 9, 30, 'Strongly agree', NULL),
(10, 10, 30, 'Neutral', NULL),
(11, 11, 30, 'Neutral', NULL),
(12, 12, 30, 'Strongly agree', NULL),
(13, 23, 30, 'Strongly agree', NULL),
(14, 21, 41, 'i cannot use sms', NULL),
(15, 22, 41, 'fast and convinase', NULL),
(16, 3, 41, '', NULL),
(17, 4, 41, 'Neutral', NULL),
(18, 5, 41, 'Disagree', NULL),
(19, 6, 41, 'Neutral', NULL),
(20, 7, 41, 'Agree', NULL),
(21, 8, 41, 'Neutral', NULL),
(22, 9, 41, 'Neutral', NULL),
(23, 10, 41, 'Neutral', NULL),
(24, 11, 41, 'Strongly disagree', NULL),
(25, 12, 41, 'Neutral', NULL),
(26, 23, 41, 'Disagree', NULL),
(27, 21, 29, 'Because my mobile phone isn''t new enough to get MMS messages, also
am only on a prepaid phone and can''t afford to send many messages.', NULL),
(28, 22, 29, 'For the first half, it was at the same pace as our studies.', NULL),
```

(29, 3, 29, 'I got sick of doing it every day, especially when I was having to read ahead of what we were actually doing in class.', NULL),
(30, 4, 29, 'Neutral', NULL),
(31, 5, 29, 'Disagree', NULL),
(32, 6, 29, 'Neutral', NULL),
(33, 7, 29, 'Disagree', NULL),
(34, 8, 29, 'Disagree', NULL),
(35, 9, 29, 'Disagree', NULL),
(36, 10, 29, 'Disagree', NULL),
(37, 11, 29, 'Disagree', NULL),
(38, 12, 29, 'Don''t know', NULL),
(39, 23, 29, 'Strongly agree', NULL),
(121, 1, 42, 'Because I wanted to have to answer the questions off the top of my head, rather than at my desk with all my notes around. ', NULL),
(122, 2, 42, 'It kept me thinking about French, even if only for a few minutes, everyday. Whether or not I had classes or was doing homework that day or whatever, I had to think about French for just a moment at least.', NULL),
(123, 3, 42, 'Often the text message with the answer and my score would only partially arrive at first, the complete text would usually arrive a few minutes later. Also, in the last week the questions moved slightly ahead of what we had learned in class. I thought I may have fallen behind or something. The conjugation of ''ir'' verbs, for instance, was covered the week after I received questions on that topic, which was a bit annoying. Other than that I found the whole thing to be quite good. \r\n\r\nI Stronly Agre', NULL),
(124, 4, 42, 'Agree', NULL),
(125, 5, 42, 'Strongly agree', NULL),
(126, 6, 42, 'Agree', NULL),
(127, 7, 42, 'Strongly agree', NULL),
(128, 8, 42, 'Strongly agree', NULL),
(129, 9, 42, 'Agree', NULL),
(130, 10, 42, 'Agree', NULL),
(131, 11, 42, 'Neutral', NULL),
(132, 12, 42, 'Neutral', NULL),
(133, 13, 42, 'Strongly agree', NULL),
(134, 14, 42, 'Agree', NULL),
(135, 15, 42, 'Strongly disagree', NULL),
(136, 16, 42, 'Nokia 6300.', NULL),
(137, 17, 42, 'Strongly agree', NULL),
(138, 18, 42, 'No', NULL),
(139, 19, 42, 'The mid afternoon time slot suited me fine. If I was busy I could just leave it til later. But, generally, I liked trying to do the exercises just of the top of my head, so the middle of the day suited me as I was mostly out and about and could not refer to notes. ', NULL),
(140, 20, 42, 'I feel the program could only have had a positive impact on my learning. As mentioned above, I think the fact that I was made to think everyday about the things I was learning in French was very beneficial. It was quick and easy and not assessed, so I didn''t feel too much pressure. The instantaneous feedback also helped me not to make any mistakes I did make in the texts in my classwork. \r\n\r\nI feel stronly that this was a positive influence on my learning of the language.', NULL),
(141, 1, 53, 'Revision is more useful when I''m out and about - I could always do the study myself if I was by a computer.', NULL),
(142, 2, 53, 'Simple to use, jogs my memory and I can answer at a time convenient to me.', NULL),
(143, 3, 53, 'Sometimes the system didn''t seem to recognise a correctly formed answer.', NULL),
(144, 4, 53, 'Neutral', NULL),

(145, 5, 53, 'Neutral', NULL),
(146, 6, 53, 'Neutral', NULL),
(147, 7, 53, 'Neutral', NULL),
(148, 8, 53, 'Agree', NULL),
(149, 9, 53, 'Agree', NULL),
(150, 10, 53, 'Neutral', NULL),
(151, 11, 53, 'Agree', NULL),
(152, 12, 53, 'Agree', NULL),
(153, 13, 53, 'Strongly agree', NULL),
(154, 14, 53, 'Disagree', NULL),
(155, 15, 53, 'Disagree', NULL),
(156, 16, 53, 'Nokia N73', NULL),
(157, 17, 53, 'Strongly agree', NULL),
(158, 18, 53, 'No', NULL),
(159, 19, 53, 'I never had an issue with the times I set up initially.', NULL),
(160, 20, 53, 'It was fun and I didn''t mind it at all. I think these sort of exercises are potentially quite useful to learning, though perhaps this particular way was limited in its scope. Though I like the idea of using mobile phones to deliver exercises, I think SMS is too limited to be truly useful.', NULL),
(242, 24, 53, 'seize', 1),
(243, 25, 53, 'quatre-vignt et un', 0),
(244, 26, 53, 'soixante-quatorze', 1),
(245, 27, 53, 'l''ordinateur', 1),
(246, 28, 53, 'la librairie', 1),
(247, 29, 53, 'la bibliothèque', 1),
(248, 30, 53, 'nous mangeons', 1),
(249, 31, 53, 'tu adores', 1),
(250, 32, 53, 'ils regardent', 1),
(251, 33, 53, 'vous détestez', 1),
(252, 34, 53, 'tu finis', 1),
(253, 35, 53, 'vous réfléchissez', 1),
(254, 36, 53, 'elles choisissent', 1),
(255, 37, 53, 'nous réussissons', 1),
(256, 38, 53, 'une chemise blanche', 1),
(257, 39, 53, 'Une nouvelle voiture', 1),
(258, 40, 53, 'Des chaussures italiennes', 1),
(259, 41, 53, 'Elle n''écoute pas', 1),
(260, 42, 53, 'Il ne parle jamais', 1),
(261, 43, 53, 'Vous ne mangez pas souvent', 1),
(262, 44, 53, 'J''ai vingt ans', 1),
(263, 45, 53, 'Nous avez temps', 0),
(264, 46, 53, 'Elle a faim', 1),
(265, 47, 53, 'Je parle à mon ami', 1),
(266, 48, 53, 'Ils parle de la musique', 0),
(267, 49, 53, 'Nous chercheons le livre de Jean', 0),
(268, 50, 53, 'Elle joue au tennis', 1),
(296, 24, 29, 'Seize', 1),
(297, 25, 29, 'Quatre-vingt-un', 1),
(298, 26, 29, 'Soixante-quatorze', 1),
(299, 27, 29, 'un ordinateur', 0),
(300, 28, 29, 'la librarie', 0),
(301, 29, 29, 'la bibliothéque', 0),
(302, 30, 29, 'Nous mangeons', 1),
(303, 31, 29, 'Tu adore', 0),
(304, 32, 29, 'Ils regardents', 0),
(305, 33, 29, 'Vous détestent', 0),

(306, 34, 29, 'Tu finis', 1),
(307, 35, 29, 'Vous réfléchis', 0),
(308, 36, 29, 'Elles choisis', 0),
(309, 37, 29, 'Nous réussis', 0),
(310, 38, 29, 'Une chemise blanche', 1),
(311, 39, 29, 'Une nouve voiture', 0),
(312, 40, 29, 'Des chaussures italiennes', 1),
(313, 41, 29, 'Elle ne écoute pas', 0),
(314, 42, 29, 'Il ne parle jamais', 1),
(315, 43, 29, 'Vous ne mangeons pas toujours', 0),
(316, 44, 29, 'J''ai vingt ans.', 1),
(317, 45, 29, 'Ils a time.', 0),
(318, 46, 29, 'Elle a faim', 1),
(319, 47, 29, 'Je parle mon ami', 0),
(320, 48, 29, 'Ils écoute musique.', 0),
(321, 49, 29, 'Nous recherchens livre Jean.', 0),
(322, 50, 29, 'Elle joue a tennis.', 0),
(431, 24, 33, 'seize', 1),
(432, 25, 33, 'quatre-vingt-un', 1),
(433, 26, 33, 'soixant-quarante', 0),
(434, 27, 33, 'l''ordinateur', 1),
(435, 28, 33, 'la librairie', 1),
(436, 29, 33, 'la bibliothèque', 1),
(437, 30, 33, 'nouse mangeons', 0),
(438, 31, 33, 'tu adores', 1),
(439, 32, 33, 'Ils regardent', 1),
(440, 33, 33, 'Vous détestez', 1),
(441, 34, 33, 'Tu finis', 1),
(442, 35, 33, 'Vous réféchissez', 0),
(443, 36, 33, 'Elles choisissent', 1),
(444, 37, 33, 'Nous réussisons', 0),
(445, 38, 33, 'Une chemise blanche', 1),
(446, 39, 33, 'Une nouvelle voiture', 1),
(447, 40, 33, 'Des chaussures italienne', 0),
(448, 41, 33, 'Elle n''écoute pas', 1),
(449, 42, 33, 'Il ne parle pas', 0),
(450, 43, 33, 'Vous souvent ne mangez pas', 0),
(451, 44, 33, 'J''ai vingt ans', 1),
(452, 45, 33, 'Nous avons temps', 0),
(453, 46, 33, 'Elle a faim', 1),
(454, 47, 33, 'Je parle à mon ami', 1),
(455, 48, 33, 'Ils parlent au musique', 0),
(456, 49, 33, 'Nous cherchons pour la livre de Jean', 0),
(457, 50, 33, 'Elle joue au tennis', 1);

-- --

--
-- Table structure for table `assessment`
--

CREATE TABLE `assessment` (
  `id` int(11) NOT NULL auto_increment,
  `name` varchar(25) collate latin1_general_ci NOT NULL,
  `day` int(11) NOT NULL,
  PRIMARY KEY (`id`),

```
  UNIQUE KEY `assessment_unique_name` (`name`),
  UNIQUE KEY `assessment_unique_day` (`day`)
)  ENGINE=InnoDB    DEFAULT   CHARSET=latin1   COLLATE=latin1_general_ci
AUTO_INCREMENT=4 ;

--
-- Dumping data for table `assessment`
--

INSERT INTO `assessment` (`id`, `name`, `day`) VALUES
(2, 'questionnaire', 30),
(3, 'first revision fun-test', 35);

-- --------------------------------------------------------


--
-- Table structure for table `exercise`
--

CREATE TABLE `exercise` (
  `id` int(11) NOT NULL auto_increment,
  `method_id` int(11) NOT NULL,
  `targetarea_id` int(11) NOT NULL,
  `name` varchar(13) collate latin1_general_ci NOT NULL,
  `answers` varchar(130) collate latin1_general_ci NOT NULL,
  `questions` varchar(130) collate latin1_general_ci NOT NULL,
  `day` int(11) NOT NULL,
  `instructions` varchar(30) collate latin1_general_ci NOT NULL,
  `casesensitive` tinyint(1) NOT NULL,
  `amr` varchar(255) collate latin1_general_ci NOT NULL,
  `mp3` varchar(255) collate latin1_general_ci NOT NULL,
  PRIMARY KEY  (`id`),
  UNIQUE KEY `exercise_unique_name` (`name`),
  UNIQUE KEY `exercise_unique_day` (`day`),
  KEY `exercise_targetarea_fk` (`targetarea_id`),
  KEY `exercise_method_fk` (`method_id`)
)  ENGINE=InnoDB    DEFAULT   CHARSET=latin1   COLLATE=latin1_general_ci
AUTO_INCREMENT=46 ;

--
-- Dumping data for table `exercise`
--

INSERT  INTO  `exercise`  (`id`,  `method_id`,  `targetarea_id`,  `name`,  `answers`,
`questions`, `day`, `instructions`, `casesensitive`, `amr`, `mp3`) VALUES
(16,            2,            9,            'Ex            S2/D1',
'dix\r\n10\r\nquatre\r\n4\r\nseize\r\n16\r\nhuit\r\n8\r\nquatorze\r\n14\r\nonze\r\n11\r\ntre
ize\r\n13\r\ndouze\r\n12\r\nvingt\r\n20',
'dix\r\n@\r\nquatre\r\n@\r\nseize\r\n@\r\nhuit\r\n@\r\nquatorze\r\n@\r\nonze\r\n@\r\ntr
eize\r\n@\r\ndouze\r\n@\r\nvingt\r\n@', 1, 'Change @ to a digit - eg. 22', 0, '16.amr',
'16.mp3'),
(17, 1, 7, 'Ex S2/D2', 'la bibliothèque\r\nl''ami\r\nles travaux\r\nl''histoire\r\nla salle\r\nle
lundi\r\nla                                              semaine\r\nl''université',
'bibliothèque\r\nami\r\ntravaux\r\nhistoire\r\nsalle\r\nlundi\r\nsemaine\r\nuniversité',   2,
'Add le/la/l''/les', 0, '17.amr', '17.mp3'),
```

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(18, 1, 8, 'Ex S2/D3', 'des livres\r\nun étudiant\r\nun cahier\r\nune question\r\nun amphi\r\nune étudiante\r\nun bureau\r\nune amie', '@ livres\r\n@ étudiant\r\n@ cahier\r\n@ question\r\n@ amphi\r\n@ étudiante\r\n@ bureau\r\n@ amie', 3, 'Replace @ with un/une/des', 0, '18.amr', '18.mp3'),
(19, 2, 11, 'Ex S2/D4', 'a whiteboard\r\nle tableau\r\na woman\r\nune femme\r\nthe chair\r\nla chaise\r\nthe computer\r\nl''ordinateur', 'a whiteboard\r\n@\r\na woman\r\n@\r\nthe chair\r\n@\r\nthe computer\r\n@', 4, 'Replace @ with translation', 0, '19.amr', '19.mp3'),
(20, 2, 16, 'Ex S2/D5', 'How are you?\r\nComment allez-vous?\r\nWhat is your name?\r\nComment vous appelez-vous?', 'How are you?\r\n@\r\nWhat is your name?\r\n@', 5, 'Replace @ with translation', 0, '20.amr', '20.mp3'),
(21, 2, 11, 'Ex S3/D1', 'the man\r\nl''homme\r\na library\r\nune bibliothèque\r\nthe bookstore\r\nla librairie\r\na mouse\r\nune souris', 'the man\r\n@\r\na library\r\n@\r\nthe bookstore\r\n@\r\na mouse\r\n@', 6, 'Replace @ with translation', 0, '21.amr', '21.mp3'),
(22, 2, 9, 'Ex S3/D2', '22\r\nvingt-deux\r\n31\r\ntrente et un\r\n63\r\nsoixante-trois\r\n81\r\nquatre-vingt-un\r\n73\r\nsoixante-treize', '22\r\n@\r\n31\r\n@\r\n63\r\n@\r\n81\r\n@\r\n73\r\n@', 7, 'Replace @ and write number', 0, '22.amr', '22.mp3'),
(23, 2, 11, 'Ex S3/D3', 'Monday\r\nlundi\r\nWednesday\r\nmercredi\r\nSaturday\r\nsamedi\r\nFriday\r\nvendredi\r\nThursday\r\njeudi', 'Monday\r\n@\r\nWednesday\r\n@\r\nSaturday\r\n@\r\nFriday\r\n@\r\nThursday\r\n@', 8, 'Replace @ with translation', 0, '23.amr', '23.mp3'),
(24, 1, 10, 'Ex S3/D4', 'nous aimons\r\nvous regardez\r\ntu cherches\r\nils adorent\r\nnous mangeons\r\nvous skiez\r\non déteste', 'nous aim@\r\nvous regard@\r\ntu cherch@\r\nils ador@\r\nnous mang@\r\nvous ski@\r\non détest@', 9, 'Replace @ with verb ending', 0, '24.amr', '24.mp3'),
(25, 1, 12, 'Ex S3/D5', 'Je n''aime pas le vin.\r\nTu ne parles pas souvent le chinois.\r\nIl n''aime pas aller au café.', 'J''aime le vin.\r\nTu parles souvent chinois.\r\nIl aime aller au café.', 10, 'Insert negative form', 0, '25.amr', '25.mp3'),
(26, 2, 12, 'Ex S4/D1', 'mange Il rien ne\r\nIl ne mange rien.\r\njamais ne Je parle\r\nJe ne parle jamais.', 'mange Il rien ne\r\n@\r\njamais ne Je parle\r\n@', 11, 'Rewrite in correct order', 0, '26.amr', '26.mp3'),
(27, 2, 12, 'Ex S4/D2', 'aiment personne Ils n''\r\nIls n''aiment personne.\r\nmanges pas Tu souvent ne\r\nTu ne manges pas souvent.', 'aiment personne Ils n''\r\n@\r\nmanges pas Tu souvent ne\r\n@', 12, 'Rewrite in correct order', 0, '27.amr', '27.mp3'),

(28, 2, 16, 'Ex S4/D3', 'Italians like coffee.\r\nLes Italiens aiment le café\r\nThey don''t listen.\r\nIls n''écoutent pas.', 'Italians like coffee.\r\n@\r\nThey don''t listen.\r\n@', 13, 'Replace @ with translation', 1, '28.amr', '28.mp3'),
(29, 1, 10, 'Ex S4/D4', 'Vous êtes riches\r\nOn est gentil\r\nJean et moi sommes sportifs\r\nTu es sérieux\r\nElles sont heureuses', 'Vous @ riches\r\nOn @ gentil\r\nJean et moi @ sportifs\r\nTu @ sérieux\r\nElles @ heureuses', 14, 'Replace @ with être', 0, '29.amr', '29.mp3'),
(30, 2, 14, 'Ex S4/D5', 'beau\r\nbelle\r\nheureux\r\nheureuse\r\nblanc\r\nblanche\r\nnouveau\r\nnouvelle\r\nitalien\r\nitalienne', 'beau\r\n@\r\nheureux\r\n@\r\nblanc\r\n@\r\nnouveau\r\n@\r\nitalien\r\n@', 15, 'Write feminine form of adj.', 0, '30.amr', '30.mp3'),
(31, 2, 16, 'Ex S5/D1', 'I always eat a pizza.\r\nJe mange toujours une pizza.\r\nHe speaks very often.\r\nIl parle très souvent.', 'I always eat a pizza.\r\n@\r\nHe speaks very often.\r\n@', 16, 'Replace @ with translation', 0, '31.amr', '31.mp3'),
(32, 1, 14, 'Ex S5/D2', 'Il porte une veste noire\r\nElles sont gentilles\r\nIl porte des bottes vertes\r\nElle est fatiguée', 'Il porte une veste [noir]\r\nElles sont [gentil]\r\nIl

porte des bottes [vert]\r\nElle est [fatigué]', 17, 'Agree adjectives', 0, '32.amr', '32.mp3'),
(33, 2, 10, 'ExS5/D3', 'étudier (je)\r\nj''étudie\r\nmanger (nous)\r\nnous mangeons\r\nnêtre (vous)\r\nvous êtes\r\nparler (tu)\r\ntu parles', 'étudier (je)\r\n@\r\nmanger (nous)\r\n@\r\nnêtre (vous)\r\n@\r\nparler (tu)\r\n@', 18, 'Conjugate', 0, '33.amr', '33.mp3'),
(34, 2, 16, 'Ex S5/D4', 'I am looking for a shirt\r\nJe cherche une chemise\r\nShoes are expensive\r\nLes chaussures sont chères', 'I am looking for a shirt\r\n@\r\nShoes are expensive\r\n@', 19, 'Replace @ with translation', 0, '34.amr', '34.mp3'),
(35, 1, 10, 'Ex S5/D5', 'J''ai 20 ans\r\nTu as soif\r\nIl a le temps\r\nVous avez faim\r\nNous avons peur\r\nElles ont raison', 'J''@ 20 ans\r\nTu @ soif\r\nIl @ le temps\r\nVous @ faim\r\nNous @ peur\r\nElles @ raison', 20, 'Replace @ with avoir', 0, '35.amr', '35.mp3'),
(36, 2, 16, 'Ex S6/D1', 'I am worried\r\nJ''ai peur\r\nI am thirsty\r\nJ''ai soif\r\nYou (tu) have an appointment\r\nTu as rendez-vous', 'I am worried\r\n@\r\nI am thirsty\r\n@\r\nYou (tu) have an appointment\r\n@', 21, 'Replace @ with translation', 0, '36.amr', '36.mp3'),
(37, 2, 16, 'Ex S6/D2', 'I don''t like being hungry.\r\nJe n''aime pas avoir faim.\r\nI hate being thirsty.\r\nJe déteste avoir soif.', 'I don''t like being hungry.\r\n@\r\nI hate being thirsty.\r\n@', 22, 'Replace @ with translation', 0, '37.amr', '37.mp3'),
(38, 2, 16, 'Ex S6/D3', 'It''s a grey mouse.\r\nC''est une souris grise.\r\nI like talking to my friend.\r\nJ''aime parler à mon ami.', 'It''s a grey mouse.\r\n@\r\nI like talking to my friend.\r\n@', 23, 'Replace @ with translation', 0, '38.amr', '38.mp3'),
(39, 1, 15, 'Ex S6/D4', 'Il joue au tennis.\r\nC''est le livre de Jean.\r\nJ''aime parler de musique.\r\nTu téléphones à un ami.', 'Il joue @ tennis.\r\nC''est le livre @ Jean.\r\nJ''aime parler @ musique.\r\nTu téléphones @ un ami.', 24, 'Replace @ with à/au or de/du', 0, '39.amr', '39.mp3'),
(40, 2, 16, 'Ex S6/D5', 'It''s Friday.\r\nC''est vendredi.\r\nI am looking for Jean''s book.\r\nJe cherche le livre de Jean.', 'It''s Friday.\r\n@\r\nI am looking for Jean''s book.\r\n@', 25, 'Replace @ with translation', 0, '40.amr', '40.mp3'),
(41, 2, 16, 'Ex S7/D1', 'She is behind the bookstore\r\nElle est derrière la librairie\r\nThere are six cars\r\nIl y a six voitures', 'She is behind the bookstore\r\n@\r\nThere are six cars\r\n@', 26, 'Replace @ with translation', 0, '41.amr', '41.mp3'),
(42, 1, 10, 'Ex S7/D2', 'Je finis\r\nTu choisis\r\nElle réussit\r\nOn finit\r\nNous choisissons\r\nVous réfléchissez\r\nIls agissent', 'Je fin@\r\nTu chois@\r\nElle réuss@\r\nOn fin@\r\nNous chois@\r\nVous réfléch@\r\nIls ag@', 27, 'Replace @ with verb ending', 0, '42.amr', '42.mp3'),
(43, 2, 16, 'Ex S7/D3', 'He is thinking about the problem.\r\nIl réfléchit au problème.\r\nI''m talking to Jean.\r\nJe parle à Jean.', 'He is thinking about the problem.\r\n@\r\nI''m talking to Jean.\r\n@', 28, 'Replace @ with translation', 0, '43.amr', '43.mp3'),
(44, 2, 15, 'Ex S7/D4', 'opposite the cinema\r\nen face du cinéma\r\nnext to the library\r\nà côté de la bibliothèque', 'opposite the cinema\r\n@\r\nnext to the library\r\n@', 29, 'Replace @ with translation', 0, '44.amr', '44.mp3'),
(45, 2, 16, 'Ex S7/D5', 'I finish studying at 8h\r\nJe finis d''étudier à 8h\r\nI often pass exams\r\nJe réussis souvent les examens', 'I finish studying at 8h\r\n@\r\nI often pass exams\r\n@', 30, 'Replace @ with translation', 0, '45.amr', '45.mp3');

-- --

--
-- Table structure for table `incoming`
--

CREATE TABLE `incoming` (

```
  `id` int(11) NOT NULL auto_increment,
  `exercise_id` int(11) NOT NULL,
  `student_id` int(11) NOT NULL,
  `text` varchar(500) collate latin1_general_ci default NULL,
  `score` float NOT NULL,
  `day` int(11) NOT NULL,
  PRIMARY KEY  (`id`),
  KEY `incoming_student_fk` (`student_id`),
  KEY `incoming_exercise_fk` (`exercise_id`)
)  ENGINE=InnoDB    DEFAULT  CHARSET=latin1  COLLATE=latin1_general_ci
AUTO_INCREMENT=239 ;

--
-- Dumping data for table `incoming`
--

INSERT INTO `incoming` (`id`, `exercise_id`, `student_id`, `text`, `score`, `day`)
VALUES
(41, 16, 33, '2\n4\n6\n8\n14\n11\n13\n12\n20\n', 0.777778, 1),
(44, 16, 41, '10\n4\n16\n8\n14\n11\n13\n12\n20\n', 1, 1),
(45, 17, 41, 'la bibliothèque\nl'' ami\nles travaux\nl'' histoire\nla salle\nle lundi\nla
semaine\nla université\n', 0.875, 1),
(46, 18, 41, 'des livres\nun étudiant\nune cahier\nun question\nun amphi\nune
étudiante\nun bureau\nune amie\n', 0.75, 1),
(81, 16, 43, '10\n4\n16\n8\n14\n11\n13\n12\n20\n', 1, 1),
(82, 16, 42, '10\n4\n16\n8\n14\n11\n13\n12\n20\n', 1, 1),
(83,    16,    48,    'quatre\nseize\nhuit\nquatorze\nonze\ntreize\ndouze\nvingt\r20\n',
0.777778, 1),
(84, 16, 53, '10\n4\n16\n8\n14\n11\n13\n12\n20\n', 1, 1),
(85, 16, 29, '10\n4\n6\n8\n14\n11\n13\n12\n20\n', 0.888889, 1),
(86, 16, 30, '10\n4\n16\n8\n14\n11\n13\n12\n20\n', 1, 1),
(87, 16, 31, '10\n4\n16\n8\n14\n11\n13\n12\n20\n', 1, 1),
(88, 17, 33, 'la bibliothèque\nl''ami\nles travaux\nl''histoire\nla salle\nle lundi\nle
semaine\nl''université\n', 0.875, 1),
(89, 18, 31, 'des livres\nun étudiant\nun cahier\nun question\nun amphi\nune
étudiante\nun bureau\nune amie\n', 0.875, 1),
(90, 16, 46, '10\n4\n17\n8\n14\n11\n13\n12\n20\n', 0.888889, 2),
(91, 17, 42, 'la bibliothèque\nl''ami\nles travaux\nl''histoire\nle salle\nle lundi\nla
semaine\nl''université\n', 0.875, 2),
(92, 17, 29, 'la bibliothèque\nl''ami\nles travaux\nl''histoire\nla salle\nle lundi\nla
semaine\nl''université\n', 1, 2),
(94, 19, 41, 'un tableau\nune femme\nune chaise\nun ordinature\n', 0.25, 2),
(95, 20, 41, 'Comment vas- tu ?\nComment tu t''apelles?\n', 0, 2),
(96, 21, 41, 'le homme\nun biologique\nun libraries\nune souris\n', 0.25, 2),
(97, 22, 41, 'vingt-deux\ntrente- trois\nsoixante-trois\nquatre-vingt- un\nsoixante-
trize\n', 0.4, 2),
(98, 23, 41, 'lundi\nmercredi\nsamedi\nvendredi\njeudi\n', 1, 2),
(99, 24, 41, 'nous aims\nvous regardez\ntu cherchs\nils adoron\nnous mangez\nvous
skiez\non détestez\n', 0.285714, 2),
(100, 25, 41, 'Je ne aime pas le vin.\nTu ne parles pas souvent chinois.\nIl ne aime
pas aller au café.\n', 0, 2),
(101, 17, 48, 'La bibliothèque\nUn ami\nDes travaux\nLa histoire\nUne salle\nLe
lundi\nLa semaine\nLa université\n', 0.375, 2),
(102, 17, 43, 'la bibliothèque\nl''ami\nles travaux\nla histoire\nla salle\nle lundi\nla
semaine\nl''université\n', 0.875, 2),
```

(103, 17, 31, 'la bibliothèque\nl''ami\nle travaux\nl''histoire\nla salle\nle lundi\nla semaine\nla université\n', 0.75, 2),

(105, 18, 42, 'des livres\nun étudiant\nune cahier\nune question\nun amphi\nune étudiante\nun bureau\nune amie\n', 0.875, 3),

(106, 18, 53, 'des livres\nun étudiant\nun cahier\nune question\nun amphi\nune étudiante\nun bureau\nune amie\n', 1, 3),

(107, 18, 43, 'des livres\nun étudiant\nun cahier\nune question\nun amphi\nune étudiante\nun bureau\nune amie\n', 1, 3),

(108, 18, 48, 'Des livres\nUn étudiant\nUn cahier\nUn question\nUne amphi\nUne étudiante\nUne bureau\nUne amie\n', 0.625, 3),

(109, 18, 29, 'un livres\nun étudiant\nun cahier\nune question\ndes amphi\nune étudiante\nun bureau\nune amie\n', 0.75, 4),

(110, 19, 29, 'un tabeau\nune femme\nune chaise\nun ordinateur\n', 0.25, 4),

(112, 19, 42, 'un tableau\nune femme\nla chaise\nl''ordinateur\n', 0.75, 4),

(114, 19, 43, 'un tableau\nune femme\nla chaise\nl''ordinateur\n', 0.75, 4),

(115, 20, 43, 'Comment allez-vous?\nComment vous-appelez vous?\n', 0.5, 5),

(117, 20, 42, 'Ca va?\nComment appellez vous?\n', 0, 5),

(118, 20, 29, 'ça va?\nComment allez-vous?\n', 0, 5),

(119, 20, 53, 'Comment Ça va?\nComment vous appelez-vous?\n', 0.5, 5),

(120, 21, 29, 'un homme\nla bibliothéque\nla librarié\nle mouse\n', 0, 5),

(121, 22, 29, 'vingt-deux\ntreize et un\nsoixante-trois\nquatre-vingt-un\nsoixante-treize\n', 0.8, 5),

(122, 18, 46, 'des livres\nun étudiant\nun cahier\nun question\nun amphi\nune étudiante\nun bureau\nune amie\n', 0.875, 6),

(123, 17, 46, 'la bibliothèque\nl'' ami\nles travaux\nla histoire\nla salle\nle lundi\nla semaine\nl'' université\n', 0.625, 6),

(124, 19, 46, 'un tableau\nune femme\nla chaise\nle ordinateur\n', 0.5, 6),

(125, 20, 46, 'Comment allez-vous?\nComment vous appelez-vous?\n', 1, 6),

(126, 21, 43, 'l''homme\nune bibliothéque\nla librairie\nune souris\n', 0.75, 6),

(127, 23, 29, 'Lundi\nMercredi\nSamedi\nVendredi\nJeudi\n', 1, 6),

(128, 21, 42, 'l''homme\nun bibliothèque\nla librairie\nune souris\n', 0.75, 6),

(129, 26, 41, 'il ne mange rien\nje ne parle jamais\n', 1, 6),

(130, 27, 41, 'ils n'' aiment personne\ntu ne manges pas souvent\n', 0.5, 6),

(131, 28, 41, 'Les italien aiment cafe\nIls ne ecoutent pas.\n', 0, 6),

(132, 22, 42, 'vingt-deux\ntrente et un\nsoixante-trois\nquatre-vingt-un\nsoixante-treize\n', 1, 7),

(133, 22, 53, 'vingt-deux\ntrente un\nsoixante trois\nquatre-vingt un\nsoixante treize\n', 0.2, 7),

(134, 22, 43, 'vingt-deux\ntrente et un\nsoixante-trois\nquatre-vingt-un\nsoixante-treize\n', 1, 7),

(135, 24, 29, 'nous aimons\nvous regardez\ntu cherches\nils adore\nnous mangeons\nvous skiez\non déteste\n', 0.857143, 7),

(136, 20, 48, 'Comment t''allez vous?\nComment t''appelez vous?\n', 0, 8),

(138, 23, 42, 'lundi\nmecredi\nsamedi\njeudi\nvenedi\n', 0.6, 8),

(139, 25, 29, 'Je ne aime pas le vin.\nTu ne parles pas souvent chinois.\nIl ne aime pas aller au café.\n', 0, 8),

(140, 23, 43, 'lundi\nmercredi\nsamedi\nvendredi\njeudi\n', 1, 8),

(141, 26, 29, 'Il mange ne rien.\nJe ne parle jamais.\n', 0.5, 9),

(142, 24, 53, 'nous aimons\nvous regardez\ntu cherches\nils adorent\nnous mangeons\nvous skiez\non déteste\n', 1, 9),

(143, 24, 42, 'nous aimons\nvous regardez\ntu cherches\nils adore\nnous mangeons\nvous skiez\non déteste\n', 0.857143, 9),

(144, 24, 43, 'nous aimons\nvous regardez\ntu cherches\nils adorent\nnous mangeons\nvous skiez\non déteste\n', 1, 9),

(145, 18, 33, 'des livres\nun étudiant\nun cahier\nun question\nune amphi\nune étudiante\nun bureau\nune amie\n', 0.75, 9),

(146, 19, 33, 'un tableau\nune femme\nune chaise\nune ordinateur\n', 0.25, 9),

(147, 25, 43, 'Je n''aime pas le vin.\nTu ne parles pas souvent chinois.\nIl n''aime pas aller au café.\n', 0.666667, 10),

(150, 25, 53, 'Je n''aime pas le vin.\nTu ne parles pas souvent chinois.\nIl n''aime pas aller au café.\n', 0.666667, 10),

(151, 29, 41, 'Vous etez riches\nOn est gentil\nJean et moi sommes sportifs\nTu es sérieux\nElles sont heureuses\n', 0.8, 10),

(152, 25, 42, 'Je n''aime pas le vin.\nTu ne parles pas souvent chinois.\nIl n''aime pas aller au café.\n', 0.666667, 10),

(153, 27, 29, 'Ils n''aiment personne\nTu ne manges pas souvent\n', 1, 11),

(154, 28, 29, 'L''Italien ils''aime café.\nIls n''écouter.\n', 0, 11),

(155, 29, 29, 'Vous êtes riches\nOn est gentil\nJean et moi sont sportifs\nTu es sérieux\nElles sont heureuses\n', 0.8, 11),

(156, 30, 29, 'belle\nheureuse\nblanche\nnouvelle\nitalienne\n', 1, 11),

(158, 26, 53, 'Il ne mange rien\nJe ne parle jamais\n', 1, 11),

(159, 26, 42, 'Il ne mange rien\nJe ne parle jamais\n', 1, 11),

(160, 26, 43, 'Il ne mange rien\nJe ne parle jamais\n', 1, 11),

(161, 27, 42, 'Ils n''aiment personne\ntu ne manges pas souvent.\n', 1, 12),

(162, 27, 53, 'Ils n''aiment personne\nTu ne manges pas souvent\n', 1, 12),

(163, 32, 41, 'Il porte une veste noire.\nElles sont gentilles.\nIl porte des bottes verts.\nElle est fatiguée.\n', 0.75, 12),

(164, 31, 41, 'Je mange le pizza toujour.\nIl parle souvent.\n', 0, 12),

(165, 33, 41, 'etudie\nmangeons\netes\nparles\n', 0, 12),

(166, 34, 41, '@\n@\n', 0, 12),

(167, 27, 43, 'Ils n''aiment personne\nTu ne manges pas souvent\n', 1, 12),

(168, 31, 29, 'Je mange toujours la pizza.\nIl parle souvent.\n', 0, 12),

(169, 28, 42, 'L''Italiens ils aiment le café\nIls n''ecoutent pas\n', 0, 13),

(170, 28, 43, 'D''italiens aiment des café.\nIls n''écoutent pas.\n', 0.5, 13),

(171, 17, 30, 'la bibliothèque\nl'' ami\nles travaux\nl'' histoire\nla salle\nla lundi\nla semaine\nle université\n', 0.5, 13),

(172, 18, 30, 'des livres\nun étudiant\nune cahier\nun question\nun amphi\nune étudiante\nun bureau\nune amie\n', 0.75, 13),

(173, 24, 30, 'nous aimons\nvous regardez\ntu cherches\nils adorent\nnous mangeons\nvous skiez\non déteste\n', 1, 13),

(174, 26, 30, 'Il ne mange rien\nJe ne parle jamais\n', 1, 13),

(175, 25, 30, 'Je n''aime pas le vin.\nTu ne parles pas souvent chinois.\nIl n''aime pas aller au café.\n', 0.666667, 13),

(176, 32, 29, 'Il porte une veste noir\nElles sont gentille\nIl porte des bottes vert\nElle est fatiguée\n', 0.25, 13),

(177, 33, 29, 'J''étudie\nNous mangeons\nVous êtrez\nTu parles\n', 0.75, 14),

(178, 29, 53, 'Replace @ with etre\nVous etes riches\nOn est gentil\nJean et moi sont sportifs\nTu es sérieux\n', 0.4, 14),

(179, 29, 43, 'Replace @ with etre\nVous etes riches\nOn est gentil\nJean et moi sommes sportifs\nTu es sérieux\n', 0.6, 14),

(180, 30, 43, 'beaue\nhereuse\nblanche\nnouveaue\nitalienne\n', 0.4, 15),

(181, 30, 42, 'belle\nheureuse\nblanche\nnouvelle\nitalienne\n', 1, 15),

(182, 29, 42, 'Vous somme riches\nOn sont gentil\nJean et moi et sportifs\nTu est sérieux\nElles et heureuses\n', 0, 15),

(184, 34, 29, 'Je cherche une cravate\nDes chaussures chère\n', 0, 15),

(185, 30, 53, 'beaue\nheureuse\nblanche\nnouveau\nitalienne\n', 0.8, 15),

(186, 35, 29, 'J''ai 20 ans\nTu as soif\nIl a le temps\nVous avez faim\nNous avons peur\nElles sont raison\n', 0.833333, 15),

(187, 36, 29, 'Je suis inquiet\nJe suis avoir soif\nTu es le rendez-vous\n', 0, 15),

(188, 37, 29, 'Je n''aime avoir faim.\nJe déteste avoir soif.\n', 0.5, 16),

(189, 31, 43, 'Je mange toujours une pizza. \nIl parle très souvent.\n', 0.5, 16),

(190, 38, 29, 'Il y a souris grise.\nJ''aime parler mon ami.\n', 0, 17),

(191, 32, 43, 'Il porte une veste [noire]\nElles sont [gentiles]\nIl porte des bottes [vertes]\nElle est [fatigué]\n', 0, 17),

(192, 33, 42, 'j''étudie\nnous mangeons\nvous êtes\ntu parles\n', 1, 18),

(193, 32, 42, 'Il porte une veste noire\nElles sont gentille\nIl porte des bottes verte\nElle est fatigué\n', 0.25, 18),

(194, 31, 42, 'Je mange un pizza toujours.\nIl parle tres souvent.\n', 0, 18),

(195, 33, 43, 'étudie\nmangeons\netre\nparles\n', 0, 18),

(196, 33, 53, 'étudie\nmangeons\netes\nparles\n', 0, 18),

(197, 34, 42, 'je suis chercher une chemise\nchaussures est cher\n', 0, 19),

(198, 34, 43, 'Je cherche une chemise\nLes chaussures sont cherère\n', 0.5, 19),

(199, 37, 42, 'Je n''aime pas avoir faim.\nJe deteste avoir soif.\n', 0.5, 22),

(200, 37, 43, 'Je n''aime pas avoir faim.\nJe déteste avoir soif.\n', 1, 22),

(201, 38, 53, 'C''est un \nJ''aime parler avec mon ami.\n', 0, 23),

(202, 38, 43, 'C''est une grise souris.\nJ''aime parler mon ami.\n', 0, 23),

(203, 38, 42, 'Ce une souris grise.\nJ''aime parler avec mon ami.\n', 0, 24),

(204, 39, 42, 'Il joue de tennis.\nC''est le livre à Jean.\nJ''aime parler du musique.\nTu téléphones à un ami.\n', 0.25, 24),

(205, 39, 43, 'Il joue au tennis.\nC''est le livre du Jean.\nJ''aime parler de musique.\nTu téléphones à un ami.\n', 0.75, 24),

(206, 20, 33, 'Comment allez-vous?\nComment vous appellez-vous?\n', 0.5, 24),

(207, 21, 33, 'le homme\nune bibliothèque\nla librairie\nune souris\n', 0.75, 24),

(208, 22, 33, 'vignt-deux\ntrente et un\nsoixante-trois\nquarante-vingt-et-un\nsoixante-treize\n', 0.6, 24),

(209, 23, 33, 'lundi\nmercredi\nsamedi\nvendredi\njeudi\n', 1, 24),

(210, 40, 43, 'C''est vendredi.\nJe cherche le livre de Jean.\n', 1, 25),

(211, 40, 42, 'C''est jeudi \nJe suis chercher pour le livre Jean.\n', 0, 25),

(212, 41, 42, 'elle es derrière la librairie\nil y a six voitures\n', 0.5, 26),

(213, 30, 41, 'bel\nheureuse\nblanch\nnouvel\nitalienne\n', 0.4, 26),

(214, 35, 41, 'J''ai 20 ans\nTu as soif\nIl a le temps\nVous avez faim\nNous avons peur\nElles ons raison\n', 0.833333, 26),

(215, 36, 41, 'j''ai soucieux\nj''ai soif \ntu as rendez-vous\n', 0.333333, 26),

(216, 42, 42, 'Je fine\nTu choises\nElle réusse\nOn finons\nNous choisons\nVous réfléchez\nIls agent\n', 0, 27),

(217, 42, 43, 'Je fine\nTu choises\nElle réusse\nOn fine\nNous choisons\nVous réfléchez\nIls agent\n', 0, 27),

(218, 43, 42, 'Il est penser au problème\nJe parle à jean\n', 0.5, 28),

(219, 43, 43, 'Il pense du problème.\nJe parle à Jean.\n', 0.5, 28),

(222, 44, 43, 'en face du cinéma\nà coté de la bibliothèque\n', 0.5, 29),

(223, 45, 43, 'Je finis de étudier à 8h\nJe passe souvent les examens\n', 0, 30),

(224, 45, 42, 'je finis étudier à 8h.\nj''ai réussis souvent examens.\n', 0, 30),

(225, 24, 33, 'nous aimons\nvous regardez\ntu cherches\nils adore\nnous mangon\nvous skiez\non déteste\n', 0.714286, 30),

(226, 25, 33, 'Je n''aime pas le vin.\nTu ne parles pas souvent chinois.\nIl n''aime pas aller au café.\n', 0.666667, 30),

(227, 26, 33, 'Il ne mange rien\nJe parle ne jamais\n', 0.5, 30),

(228, 27, 33, 'Ils n''aiment personne\nTu ne manges pas souvent\n', 1, 30),

(229, 28, 33, 'l''Italiens aiment un cafe\nVous ne regardez pas\n', 0, 30),

(230, 19, 30, 'un tableau\nune femme\nune chaise\nun ordinateur\n', 0.25, 30),

(231, 20, 30, 'ça va?\nComment vous appelez-vous?\n', 0.5, 30),

(232, 21, 30, 'le homme\nun bibliothèque\nla librairie\nune souris\n', 0.5, 30),

(233, 22, 30, 'vingt-deux\ntrente et un\nsoixante-trois\nquatre-vingt-un\nsoixante-douze\n', 0.8, 30),

(234, 23, 30, 'lundi\nmercredi\nsamedi\nvendredi\njeudi\n', 1, 30),

(235, 27, 30, 'Ils n''aiment presonne\nTu ne manges pas souvent\n', 0.5, 30),

(236, 28, 30, 'Italiens aiment café.\nIls n''ecoutent pas.\n', 0, 30),

(237, 29, 30, 'Vous êtes riches\nOn est gentil\nJean et moi sommes sportifs\nTu es sérieux\nElles sont heureuses\n', 1, 30),
(238, 30, 30, 'belle\nheureuse\nblache\nnouveaux\nilalienne\n', 0.4, 30);

-- --

--
-- Table structure for table `login`
--

CREATE TABLE `login` (
  `id` int(11) NOT NULL auto_increment,
  `student_id` int(11) NOT NULL,
  `date` varchar(50) collate latin1_general_ci NOT NULL,
  PRIMARY KEY (`id`),
  KEY `login_student_fk` (`student_id`)
) ENGINE=InnoDB   DEFAULT CHARSET=latin1   COLLATE=latin1_general_ci
AUTO_INCREMENT=255 ;

--
-- Dumping data for table `login`
--

INSERT INTO `login` (`id`, `student_id`, `date`) VALUES
(107, 29, '022108200903'),
(108, 30, '022208104434'),
(109, 33, '022208174835'),
(113, 31, '022408215036'),
(116, 41, '022508111629'),
(118, 43, '022508160614'),
(122, 30, '022508202315'),
(125, 31, '022508232331'),
(131, 33, '022808132836'),
(132, 53, '022808133735'),
(133, 31, '022808133941'),
(134, 53, '022808144032'),
(147, 29, '030308134315'),
(148, 29, '030308205921'),
(149, 30, '030308210935'),
(150, 31, '030308213133'),
(151, 33, '030308213615'),
(152, 29, '030408170112'),
(153, 29, '030408180520'),
(155, 41, '030408184913'),
(156, 31, '030408205827'),
(157, 29, '030608093621'),
(159, 29, '030708191136'),
(160, 29, '030808125317'),
(161, 29, '030908214006'),
(162, 29, '031008120855'),
(163, 29, '031008141337'),
(164, 41, '031008175436'),
(165, 29, '031108123413'),
(166, 29, '031108191111'),
(167, 41, '031208120402'),
(168, 29, '031208142324'),

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(169, 29, '031208235719'),
(170, 29, '031308100836'),
(171, 33, '031308204129'),
(172, 41, '031408143437'),
(173, 29, '031708191346'),
(174, 29, '031808124524'),
(175, 41, '031808165620'),
(176, 29, '031808182150'),
(177, 29, '031908133854'),
(178, 29, '031908195245'),
(179, 30, '031908195803'),
(180, 29, '032008122227'),
(182, 29, '032108172304'),
(183, 29, '032208112644'),
(184, 29, '032308180341'),
(185, 29, '032408111804'),
(186, 29, '032408163230'),
(187, 29, '032508100318'),
(188, 29, '032508112208'),
(189, 29, '032608101541'),
(190, 33, '040308204816'),
(191, 41, '040708220541'),
(197, 33, '041208210625'),
(198, 30, '041308140925'),
(201, 30, '041708201058'),
(202, 30, '041708201500'),
(203, 41, '041808124045'),
(204, 29, '041808144448'),
(214, 42, '042108192439'),
(220, 53, '042208110453'),
(222, 53, '042208113906'),
(223, 53, '042208114205'),
(224, 53, '042208114634'),
(226, 29, '042208182354'),
(230, 29, '042508211637'),
(231, 30, '042508212040'),
(233, 41, '042508212135'),
(235, 42, '042508212239'),
(236, 53, '042508212307'),
(240, 48, '051708004542'),
(244, 33, '061008202058'),
(245, 30, '061708084338'),
(246, 33, '061808192712'),
(247, 30, '061908083122'),
(248, 29, '081008142926'),
(249, 42, '081008143241'),
(250, 29, '081008154536'),
(251, 42, '081008155211'),
(252, 29, '081008184244'),
(253, 42, '081008232016'),
(254, 29, '081108003132');

-- --------------------------------------------------------

--
-- Table structure for table `method`
```

```
--

CREATE TABLE `method` (
  `id` int(11) NOT NULL,
  `name` varchar(50) collate latin1_general_ci NOT NULL,
  PRIMARY KEY  (`id`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1 COLLATE=latin1_general_ci;

--
-- Dumping data for table `method`
--

INSERT INTO `method` (`id`, `name`) VALUES
(1, 'Each line'),
(2, 'Every second line');

-- --------------------------------------------------------

--
-- Table structure for table `question`
--

CREATE TABLE `question` (
  `id` int(11) NOT NULL auto_increment,
  `assessment_id` int(11) NOT NULL,
  `targetarea_id` int(11) default NULL,
  `rank` int(11) NOT NULL,
  `question` varchar(255) collate latin1_general_ci NOT NULL,
  `answers` text collate latin1_general_ci,
  `students` set('mall','call','both') collate latin1_general_ci NOT NULL,
  PRIMARY KEY  (`id`),
  KEY `question_targetarea_fk` (`targetarea_id`),
  KEY `question_assessment_fk` (`assessment_id`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1 COLLATE=latin1_general_ci
AUTO_INCREMENT=51 ;

--
-- Dumping data for table `question`
--

INSERT INTO `question` (`id`, `assessment_id`, `targetarea_id`, `rank`, `question`,
`answers`, `students`) VALUES
(1, 2, NULL, 1, 'Why did you chose to use your mobile phone as opposed to the web
based system?', NULL, 'mall'),
(2, 2, NULL, 2, 'What was the best aspect of the mobile phone learning program?',
NULL, 'mall'),
(3, 2, NULL, 3, 'Have you had any particular problems?', NULL, 'both'),
(4, 2, NULL, 4, 'The 6 week program helped me perform better in my language
studies:', 'Strongly agree\r\nAgree\r\nNeutral\r\nDisagree\r\nStrongly disagree\r\nDon''t
know', 'both'),
(5, 2, NULL, 5, 'As a result of my participation in this program my motivation
increased:', 'Strongly agree\r\nAgree\r\nNeutral\r\nDisagree\r\nStrongly
disagree\r\nDon''t know', 'both'),
(6, 2, NULL, 6, 'The program helped me learn better:', 'Strongly
agree\r\nAgree\r\nNeutral\r\nDisagree\r\nStrongly disagree\r\nDon''t know', 'both'),
```

(7, 2, NULL, 7, 'I would like to continue using this method of study:', 'Strongly agree\r\nAgree\r\nNeutral\r\nDisagree\r\nStrongly disagree\r\nDon''t know', 'both'),
(8, 2, NULL, 8, 'I would recommend this method of study to others:', 'Strongly agree\r\nAgree\r\nNeutral\r\nDisagree\r\nStrongly disagree\r\nDon''t know', 'both'),
(9, 2, NULL, 9, 'I found the exercises appropriate in relation to my course:', 'Strongly agree\r\nAgree\r\nNeutral\r\nDisagree\r\nStrongly disagree\r\nDon''t know', 'both'),
(10, 2, NULL, 10, 'I would describe the exercises as being moderately difficult:', 'Strongly agree\r\nAgree\r\nNeutral\r\nDisagree\r\nStrongly disagree\r\nDon''t know', 'both'),
(11, 2, NULL, 11, 'I found the feedback informative:', 'Strongly agree\r\nAgree\r\nNeutral\r\nDisagree\r\nStrongly disagree\r\nDon''t know', 'both'),
(12, 2, NULL, 12, 'The audio feedback helped me with my pronunciation:', 'Strongly agree\r\nAgree\r\nNeutral\r\nDisagree\r\nStrongly disagree\r\nDon''t know', 'both'),
(13, 2, NULL, 13, 'Using my mobile phone to complete the exercises was convenient:', 'Strongly agree\r\nAgree\r\nNeutral\r\nDisagree\r\nStrongly disagree\r\nDon''t know', 'mall'),
(14, 2, NULL, 14, 'The cost of SMS messages was an issue:', 'Strongly agree\r\nAgree\r\nNeutral\r\nDisagree\r\nStrongly disagree\r\nDon''t know', 'mall'),
(15, 2, NULL, 15, 'While completing exercises I referred to my coursework:', 'Strongly agree\r\nAgree\r\nNeutral\r\nDisagree\r\nStrongly disagree\r\nDon''t know', 'mall'),
(16, 2, NULL, 16, 'What mobile phone (model) did you use during the program?', NULL, 'mall'),
(17, 2, NULL, 17, 'I was comfortable with using my phone to complete the exercises:', 'Strongly agree\r\nAgree\r\nNeutral\r\nDisagree\r\nStrongly disagree\r\nDon''t know', 'mall'),
(18, 2, NULL, 18, 'Have you ever logged on the website to change the exercises delivery times?', 'Yes\r\nNo', 'mall'),
(19, 2, NULL, 19, 'Why / why not?', NULL, 'mall'),
(20, 2, NULL, 20, 'What sort of impact did the 6 week program have on your learning and why do you think it had such an impact?', NULL, 'mall'),
(21, 2, NULL, 1, 'Why did you chose to use your computer as opposed to your mobile phone to complete your exercises?', NULL, 'call'),
(22, 2, NULL, 2, 'What was the best feature of the web based learning program?', NULL, 'call'),
(23, 2, NULL, 13, 'The cost of SMS messages was one of the reasons I chose to use my computer rather than my mobile phone to complete the exercises:', 'Strongly agree\r\nAgree\r\nNeutral\r\nDisagree\r\nStrongly disagree\r\nDon''t know', 'call'),
(24, 3, 9, 1, 'Write this number in French: 16', 'seize', 'both'),
(25, 3, 9, 2, 'Write this number in French: 81', 'quatre-vingt-un', 'both'),
(26, 3, 9, 3, 'Write this number in French: 74', 'soixante-quatorze', 'both'),
(27, 3, 11, 4, 'Write in French: the computer', 'l''ordinateur', 'both'),
(28, 3, 11, 5, 'Write in French: the bookstore', 'la librairie', 'both'),
(29, 3, 11, 6, 'Write in French: the library', 'la bibliothèque', 'both'),
(30, 3, 10, 7, 'Add correct verb ending: Nous mang(er)', 'Nous mangeons', 'both'),
(31, 3, 10, 8, 'Add correct verb ending: Tu ador(er)', 'Tu adores', 'both'),
(32, 3, 10, 9, 'Add correct verb ending: Ils regard(er)', 'Ils regardent', 'both'),
(33, 3, 10, 10, 'Add correct verb ending: Vous détest(er)', 'Vous détestez', 'both'),
(34, 3, 10, 11, 'Add correct verb ending: Tu fin(ir)', 'Tu finis', 'both'),
(35, 3, 10, 12, 'Add correct verb ending: Vous réfléch(ir)', 'Vous réfléchissez', 'both'),
(36, 3, 10, 13, 'Add correct verb ending: Elles chois(ir)', 'Elles choisissent', 'both'),
(37, 3, 10, 14, 'Add correct verb ending: Nous réuss(ir)', 'Nous réussissons', 'both'),
(38, 3, 14, 15, 'Agree the adjective: Une chemise blanc(?)', 'Une chemise blanche', 'both'),
(39, 3, 14, 16, 'Agree the adjective: Une nouv(?) voiture', 'Une nouvelle voiture', 'both'),
(40, 3, 14, 17, 'Agree the adjective: Des chaussures italien(?)', 'Des chaussures italiennes', 'both'),

(41, 3, 16, 18, 'Translate: She doesn''t listen', 'Elle n''écoute pas', 'both'),
(42, 3, 16, 19, 'Translate: He never speaks', 'Il ne parle jamais', 'both'),
(43, 3, 16, 20, 'Translate: You (vous) don't eat often', 'Vous ne mangez pas souvent', 'both'),
(44, 3, 16, 21, 'Translate: I am twenty years old', 'J''ai vingt ans', 'both'),
(45, 3, 16, 22, 'Translate: We have time', 'Nous avons le temps', 'both'),
(46, 3, 16, 23, 'Translate: She is hungry', 'Elle a faim', 'both'),
(47, 3, 16, 24, 'Translate: I talk to my friend', 'Je parle à mon ami', 'both'),
(48, 3, 16, 25, 'Translate: They speak about music', 'Ils parlent de musique', 'both'),
(49, 3, 16, 26, 'Translate: We are looking for Jean''s book.', 'Nous cherchons le livre de Jean', 'both'),
(50, 3, 16, 27, 'Translate: She plays tennis', 'Elle joue au tennis', 'both');

-- --

--
-- Table structure for table `reminder`
--

CREATE TABLE `reminder` (
  `id` int(11) NOT NULL auto_increment,
  `text` varchar(160) collate latin1_general_ci NOT NULL,
  `name` varchar(50) collate latin1_general_ci NOT NULL,
  `day` int(11) NOT NULL,
  PRIMARY KEY (`id`),
  UNIQUE KEY `reminder_unique_name` (`name`),
  UNIQUE KEY `reminder_unique_day` (`day`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1 COLLATE=latin1_general_ci
AUTO_INCREMENT=1 ;

--
-- Dumping data for table `reminder`
--

-- --

--
-- Table structure for table `schedule`
--

CREATE TABLE `schedule` (
  `id` int(11) NOT NULL,
  `mon` varchar(20) collate latin1_general_ci NOT NULL,
  `tue` varchar(20) collate latin1_general_ci NOT NULL,
  `wed` varchar(20) collate latin1_general_ci NOT NULL,
  `thu` varchar(20) collate latin1_general_ci NOT NULL,
  `fri` varchar(20) collate latin1_general_ci NOT NULL,
  PRIMARY KEY (`id`),
  KEY `studentschedule_student_fk` (`id`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1 COLLATE=latin1_general_ci;

--
-- Dumping data for table `schedule`
--

```
INSERT INTO `schedule` (`id`, `mon`, `tue`, `wed`, `thu`, `fri`) VALUES
(42, '13:00', '13:00', '13:00', '13:00', '13:00'),
(43, '13:00', '17:00', '16:00', '17:00', '09:00'),
(46, '13:00', '13:00', '13:00', '13:00', '13:00'),
(48, '13:00', '13:00', '13:00', '13:00', '13:00'),
(53, '20:00', '16:00', '11:00', '13:00', '13:00');
```

-- --

--
-- Table structure for table `student`
--

```
CREATE TABLE `student` (
  `id` int(11) NOT NULL auto_increment,
  `mobile` int(9) default NULL,
  `email` varchar(255) collate latin1_general_ci default NULL,
  `passwd` varchar(10) collate latin1_general_ci default NULL,
  `verified` tinyint(4) NOT NULL,
  PRIMARY KEY  (`id`),
  UNIQUE KEY `student_unique_mobile` (`mobile`),
  UNIQUE KEY `student_unique_email` (`email`)
)  ENGINE=InnoDB    DEFAULT   CHARSET=latin1   COLLATE=latin1_general_ci
AUTO_INCREMENT=54 ;
```

--
-- Dumping data for table `student`
--

```
INSERT INTO `student` (`id`, `mobile`, `email`, `passwd`, `verified`) VALUES
(29, NULL, 'studentA@censored.com', 'censored', 1),
(30, NULL, 'studentB@censored.com', 'censored', 1),
(31, NULL, 'studentC@censored.com', 'censored', 1),
(33, NULL, 'studentD@censored.com', 'censored', 1),
(41, NULL, 'studentE@censored.com', 'censored', 1),
(42, 444444441, NULL, 'censored', 1),
(43, 444444442, NULL, 'censored', 1),
(46, 444444443, NULL, 'censored', 1),
(48, 444444444, NULL, 'censored', 1),
(53, 444444445, NULL, 'censored', 1);
```

-- --

--
-- Table structure for table `syspref`
--

```
CREATE TABLE `syspref` (
  `passwd` varchar(10) collate latin1_general_ci NOT NULL,
  `startdate` varchar(10) collate latin1_general_ci NOT NULL,
  `id` int(11) NOT NULL,
  `emailfrom` varchar(250) collate latin1_general_ci NOT NULL,
  `namefrom` varchar(250) collate latin1_general_ci NOT NULL,
  `perpage` int(11) NOT NULL,
  `weeks` int(10) unsigned NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1 COLLATE=latin1_general_ci;
```

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```
--
-- Dumping data for table `syspref`
--

INSERT INTO `syspref` (`passwd`, `startdate`, `id`, `emailfrom`, `namefrom`,
`perpage`, `weeks`) VALUES
('temp01', '2008-03-03', 0, 'vask1@student.monash.edu.au', 'Monash MALL Research
Team', 10, 12);

-- --------------------------------------------------------

--
-- Table structure for table `targetarea`
--

CREATE TABLE `targetarea` (
  `id` int(11) NOT NULL auto_increment,
  `name` varchar(13) collate latin1_general_ci default NULL,
  PRIMARY KEY  (`id`),
  UNIQUE KEY `targetarea_unique_name` (`name`)
)  ENGINE=InnoDB    DEFAULT   CHARSET=latin1   COLLATE=latin1_general_ci
AUTO_INCREMENT=17 ;

--
-- Dumping data for table `targetarea`
--

INSERT INTO `targetarea` (`id`, `name`) VALUES
(14, 'Adjs agreem.'),
(13, 'Communicating'),
(10, 'Conjugation'),
(7, 'Def. articles'),
(8, 'Ind. articles'),
(12, 'Negation'),
(9, 'Numbers'),
(15, 'Prepositions'),
(16, 'Translation'),
(11, 'Vocabulary');

-- --------------------------------------------------------

--
-- Table structure for table `view`
--

CREATE TABLE `view` (
  `id` int(10) unsigned NOT NULL auto_increment,
  `student_id` int(11) NOT NULL,
  `exercise_id` int(11) default NULL,
  `day` int(11) NOT NULL,
  PRIMARY KEY  (`id`),
  KEY `view_exercise_fk` (`exercise_id`),
  KEY `view_student_fk` (`student_id`)
)  ENGINE=InnoDB    DEFAULT   CHARSET=latin1   COLLATE=latin1_general_ci
AUTO_INCREMENT=361 ;
```

--
-- Dumping data for table `view`
--

INSERT INTO `view` (`id`, `student_id`, `exercise_id`, `day`) VALUES
(158, 33, 16, 1),
(165, 41, 16, 1),
(166, 41, 16, 1),
(167, 41, 17, 1),
(168, 41, 18, 1),
(169, 41, 19, 1),
(206, 29, 16, 1),
(207, 30, 16, 1),
(208, 31, 16, 1),
(209, 31, 18, 1),
(210, 33, 17, 1),
(211, 33, 17, 1),
(212, 29, 17, 2),
(213, 29, 17, 2),
(215, 41, 19, 2),
(216, 41, 20, 2),
(217, 41, 21, 2),
(218, 41, 22, 2),
(219, 41, 23, 2),
(220, 41, 24, 2),
(221, 41, 25, 2),
(222, 31, 17, 2),
(223, 29, 18, 4),
(224, 29, 19, 4),
(226, 29, 20, 5),
(227, 29, 21, 5),
(228, 29, 22, 5),
(229, 29, 23, 6),
(230, 29, 23, 6),
(231, 41, 26, 6),
(232, 41, 27, 6),
(233, 41, 28, 6),
(234, 29, 24, 7),
(235, 41, 29, 8),
(236, 29, 25, 8),
(237, 29, 26, 9),
(238, 33, 18, 9),
(239, 33, 19, 9),
(240, 41, 29, 10),
(241, 41, 30, 10),
(242, 29, 27, 11),
(243, 29, 28, 11),
(244, 29, 29, 11),
(245, 29, 30, 11),
(246, 41, 31, 12),
(247, 41, 32, 12),
(248, 41, 31, 12),
(249, 41, 33, 12),
(250, 41, 34, 12),
(251, 41, 35, 12),

(252, 29, 31, 12),
(253, 29, 31, 12),
(254, 29, 32, 13),
(255, 30, 17, 13),
(256, 30, 16, 13),
(257, 30, 18, 13),
(258, 30, 19, 13),
(259, 30, 20, 13),
(260, 30, 21, 13),
(261, 30, 22, 13),
(262, 30, 24, 13),
(263, 30, 23, 13),
(264, 30, 26, 13),
(265, 30, 29, 13),
(266, 30, 25, 13),
(267, 29, 32, 13),
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(274, 29, 35, 15),
(275, 29, 36, 15),
(276, 29, 37, 16),
(277, 29, 38, 17),
(278, 29, 39, 18),
(279, 33, 20, 24),
(280, 33, 21, 24),
(281, 33, 22, 24),
(282, 33, 23, 24),
(283, 41, 30, 26),
(284, 41, 35, 26),
(285, 41, 36, 26),
(286, 41, 37, 26),
(287, 33, 24, 30),
(288, 33, 25, 30),
(289, 33, 26, 30),
(290, 33, 27, 30),
(291, 33, 28, 30),
(292, 33, 29, 30),
(293, 30, 19, 30),
(294, 30, 20, 30),
(295, 30, 21, 30),
(296, 30, 22, 30),
(297, 30, 23, 30),
(298, 30, 16, 30),
(299, 30, 27, 30),
(300, 30, 28, 30),
(301, 30, 29, 30),
(302, 30, 30, 30),
(303, 30, 31, 30),
(304, 30, 31, 34),
(305, 41, 37, 35),
(306, 41, 38, 35),
(307, 41, 39, 35),
(308, 41, 40, 35),
(309, 41, 41, 35),
(310, 41, 42, 35),
(311, 41, 43, 35),

```
(312, 41, 44, 35),
(313, 41, 45, 35),
(320, 33, 29, 72),
(321, 33, 30, 72),
(322, 33, 31, 72),
(323, 33, 32, 72),
(324, 33, 33, 72),
(325, 33, 34, 72),
(326, 33, 35, 72),
(327, 33, 36, 72),
(328, 33, 37, 72),
(329, 33, 38, 72),
(330, 33, 39, 72),
(331, 33, 40, 72),
(332, 33, 41, 72),
(333, 33, 42, 72),
(334, 33, 43, 72),
(335, 33, 45, 72),
(336, 30, 31, 77),
(337, 33, 44, 78),
(338, 30, 32, 79),
(339, 30, 33, 79),
(340, 30, 34, 79),
(341, 30, 35, 79),
(342, 30, 36, 79),
(343, 30, 37, 79),
(344, 30, 38, 79),
(345, 30, 39, 79),
(346, 30, 40, 79),
(347, 30, 41, 79),
(348, 30, 42, 79),
(349, 30, 43, 79),
(350, 30, 44, 79),
(351, 30, 45, 79),
(352, 30, 16, 79),
(353, 30, 17, 79),
(354, 30, 18, 79),
(355, 30, 19, 79),
(356, 29, 24, 115),
(357, 29, 45, 116),
(358, 29, 20, 116),
(359, 29, 26, 116),
(360, 29, 30, 116);

--
-- Constraints for dumped tables
--


--
-- Constraints for table `answer`
--
ALTER TABLE `answer`
  ADD CONSTRAINT `answer_ibfk_1` FOREIGN KEY (`student_id`) REFERENCES
`student` (`id`) ON DELETE CASCADE ON UPDATE CASCADE,
  ADD CONSTRAINT `answer_ibfk_2` FOREIGN KEY (`question_id`) REFERENCES
`question` (`id`) ON DELETE CASCADE ON UPDATE CASCADE;
```

```
--
-- Constraints for table `exercise`
--
ALTER TABLE `exercise`
 ADD    CONSTRAINT    `exercise_ibfk_1`    FOREIGN    KEY    (`targetarea_id`)
REFERENCES `targetarea` (`id`) ON DELETE CASCADE ON UPDATE CASCADE,
 ADD CONSTRAINT `exercise_ibfk_2` FOREIGN KEY (`method_id`) REFERENCES
`method` (`id`) ON DELETE CASCADE ON UPDATE CASCADE;


--
-- Constraints for table `incoming`
--
ALTER TABLE `incoming`
 ADD CONSTRAINT `incoming_ibfk_1` FOREIGN KEY (`student_id`) REFERENCES
`student` (`id`) ON DELETE CASCADE ON UPDATE CASCADE,
 ADD    CONSTRAINT    `incoming_ibfk_2`    FOREIGN    KEY    (`exercise_id`)
REFERENCES `exercise` (`id`) ON DELETE CASCADE ON UPDATE CASCADE;


--
-- Constraints for table `login`
--
ALTER TABLE `login`
 ADD CONSTRAINT `login_ibfk_1` FOREIGN KEY (`student_id`) REFERENCES
`student` (`id`) ON DELETE CASCADE ON UPDATE CASCADE;


--
-- Constraints for table `question`
--
ALTER TABLE `question`
 ADD    CONSTRAINT    `question_ibfk_1`    FOREIGN    KEY    (`targetarea_id`)
REFERENCES `targetarea` (`id`) ON DELETE CASCADE ON UPDATE CASCADE,
 ADD    CONSTRAINT    `question_ibfk_2`    FOREIGN    KEY    (`assessment_id`)
REFERENCES `assessment` (`id`) ON DELETE CASCADE ON UPDATE CASCADE;


--
-- Constraints for table `schedule`
--
ALTER TABLE `schedule`
 ADD    CONSTRAINT    `schedule_ibfk_1`    FOREIGN    KEY    (`id`)    REFERENCES
`student` (`id`) ON DELETE CASCADE ON UPDATE CASCADE;


--
-- Constraints for table `view`
--
ALTER TABLE `view`
 ADD CONSTRAINT `view_ibfk_1` FOREIGN KEY (`exercise_id`) REFERENCES
`exercise` (`id`) ON DELETE CASCADE ON UPDATE CASCADE,
 ADD CONSTRAINT `view_ibfk_2` FOREIGN KEY (`student_id`) REFERENCES
`student` (`id`) ON DELETE CASCADE ON UPDATE CASCADE;
```