EFFECTIVENESS OF REVIEW CLASSES IN IMPROVING THE EXAM PERFORMANCE OF ENGINEERING STUDENTS

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Abstract

This quasi-experimental study aimed to find out if the review classes conducted by the College of Environmental Design and Engineering were effective in improving the qualifying exam performance of students. Sixty-six students (42 males and 24 females) participated in the exam, which consisted of 60 items divided into 7 subject areas: 10 items each for Integral Calculus, Differential Calculus, and Physics; 8 items each for Algebra, Trigonometry, as well as Probability and Statistics; and 6 items for Analytic and Solid Geometry. Students took the pretest qualifying exam prior to the review. They attended review classes for 57 hours during the summer term, after which the posttest was administered. *T*-test was used to determine if there was a significant difference between the pretest and the posttest scores of students combined and the female and male members separately after attending the qualifying review. Results revealed a significant difference between the pretest and the posttest scores of the participants, showing a consistent marked improvement in the mean scores of the posttest with the female members demonstrating slightly higher knowledge gain compared to the male members. This means that the review classes conducted by the department helped improve the scores of students in the qualifying examination. However, as it is the first full implementation of the review classes, it is recommended that a true experimental study be conducted again using an improved qualifying examination instrument.

Keywords: qualifying review, qualifying examination, exam performance, pretest-posttest design

Introduction

For the past thirty years, the College of Environmental Design and Engineering (CEDE) has focused its efforts on the growth of enrollment, the quality of its students and graduates, and the percentage of passing in the government licensure examinations. Attempts have been done to further enhance the quality of its students and graduates, and to further improve its passing rate in the licensure examinations. However, attempts instituted seemed less effective.

One area that needs improvement is the rigorous screening process of CEDE applicants through the conduct of a qualifying examination. In order to improve the performance of the selection process of those who will continue with the program, review classes or the qualifying review are being implemented to improve students' performance in the qualifying examination.

Implemented three years ago, the Qualifying Examination (QE) was instituted in the CEDE precisely to compliment the placement examination conducted by the Guidance Office for freshman applicants for all engineering offerings of the CEDE during enrollment. As the University practices open admission, the QE would serve as the basis for accepting those who would want to continue with their enrollment in the professional engineering courses. Thus, for two years starting SY 2013 – 2014, the Qualifying Review and Qualifying Examination (QRQE) were implemented on an experimental basis. Its aim was to orient first -year and second-year students enrolled in the College of the screening process that passing the QE is a requirement before they can enroll in the third-year level of the curriculum they are following. Also, other stakeholders, especially the parents, are reached out for them to be aware of the changes being instituted and implemented by the College, which would greatly affect their children's enrollment in the engineering programs of the University.

Further refinement of the mechanics of the implementation of the project was addressed during the two-year trial run. Its third year of implementation in SY 2015 – 2016 was the first full implementation of the project; hence, this study. This is the first of the three studies relative to the implementation of the Qualifying Review and Qualifying Examination

(QRQE) of the CEDE.

Quasi-Experimental Design

The results of the first full implementation of the QRQE in SY 2015 – 2016 served as the data to determine the effectiveness of the QR on the results of the QE. The one-group pretest – posttest design model was utilized in this quasi-experimental study for two reasons. The first was to evaluate the effectiveness of the intervention, the QR, which was implemented prior to the evaluation procedure when the posttest was conducted. Another reason was to address issues on external and construct validity, as cited by Shadish, Cook, and Campbell (2002). Cautions are cited for limitations on the use of quasi-experiments by several researchers. According to them, when results are compared to true-experiments, both appear to be substantially different. However, differences are considerably reduced to high-quality quasi-experiments when they are based on creative design techniques that could reduce various threats causing findings to be invalid or unreliable (Green, Camili, and Elmore, 2006).

In the present study, threats were partly addressed by the content of the qualifying exam. The topics covered were Mathematics, Physics, and Statistics – the same courses taken by the students when they were in their first-year and second-year level of studies in the CEDE. The QR is purely a refresher course to re-acquaint the examinees of the theories and principles, as well as their applications, which they learned in their two-year stay in the CEDE. As Kowalczyk (2017) claims, the results of the QE would determine the extent of learning the students have gained in their 1st year and 2nd year enrollment, and that any difference between the results of the pretest and the posttest is due largely from the qualifying review.

In a study by Delucchi (2014), the pretest-posttest design was used to measure student learning in undergraduate statistics course taught over a seven-year period by the same sociology instructor. The pretest-posttest instrument revealed statistically significant gains in knowledge for each course section and all sections combined. His study demonstrated that pretest can establish students' prior knowledge while the posttest can

measure learning at the end of the course. In this case, the treatment given was the classroom teaching performed over the semester, where he further concluded that the pretest-posttest knowledge gain was influenced more by the content and presentation of the social statistics course rather than by students' statistical ability and/or test-taking skills prior to the treatment. He recommended the use of pretest-posttest data to inform pedagogy in social statistics.

One-Group Pretest-Posttest Design

This pretest-posttest design utilizes one group of students who undertake the test before any intervention is administered (Dimitrov and Rumrill, 2003; Fancher, 2010) and any change that may appear as a result of the posttest would be attributed to the intervention applied to the group (Kowalczyk, 2017). In this study, the incoming third-year students initially took the pretest before the start of the summer term. The qualifying review which was designed by the College was conducted for the duration of the term before the posttest was administered using the same set of examination questions given during the pretest. The assumption is that the intervention would give an impact on the results of the posttest. However, according to Slavin (2007), "*Pre-posttest comparison is prone to so many errors and biases that they are rarely, if ever, justifiable."* He cautioned that extraneous variables or those variables that are outside of the researcher's control may exert influence on the study findings; hence, differences found may not be attributed solely on the treatment but from other unaccounted for factors. Also, the determination of whether the differences noted on pretest and posttest are more than or less than what should have been expected is also a point of contention (Slavin, 2007).

The possibility that a pretest impacts posttest scores can happen when the duration between the pretest and the posttest administration is short, or the application of the treatment is for a shorter period that the group receiving the treatment has the chance to practice or recall the test earlier conducted. The researchers believe that the intervention or treatment conducted should make an impact on the posttest scores rather than the pretest affecting the results of the posttest.

In relation to pretest-posttest, Huck and McLean (1975, p. 54) stressed, Pretreatment ability as measured by the pretest is perhaps the single most important predictor of post-treatment ability as measured by the posttest, and taking inter-individual differences in pretreatment ability into account greatly improves the precision of the study with respect to the treatment effect. However, the analysis of pretest-posttest studies reported in the literature are often needlessly complicated and can be simplified for greater readability with-out loss of technical accuracy.

Slavin (2007) mentioned a situation where one-group pretest-posttest design is useful. It is when pretest scores are available that have remained stable for a long period of time and that no other significant changes occurred or implemented that could influence the participants. In such a case, causality can be assumed with the one-group pretest-posttest experiment.

In the study by Zerrin Ayvaz Reis and Sednem Ozdemir (2014), they used one-group pretest-posttest design to determine if DIMLE has a positive effect on the improvement of pre-service teachers' computer literacy level. The authors applied statistical analysis on the pretest-posttest results for the study group. This was done separately for both the male and female participants. They concluded that GeoGebra, one of the famous DIMLE, has consistently demonstrated a positive effect on the improvement of the pre-service teachers' computer literacy level.

The implementation of the QRQE in the CEDE started in SY 2013-2014 when the participants of the present study were not yet enrolled in the first year level of the curriculum in the CEDE. The study used the pretest results of the QRQE in SY 2015-2016 when the participants have completed their second year. It only shows that the participants were not randomly selected. During these periods, no changes occurred nor policies implemented regarding teaching and learning, as well as policy changes in the CEDE operation. Students who took the Qualifying Examination were taught by the same set of teachers during their first and second year of enrollment and the same set of teachers were the ones who reviewed them during the summer term in the Qualifying Review classes. Hence, the one-group pretest-posttest design is applicable and useful in the present study and the effect of

extraneous variables influencing the results of the posttest is minimized.

The CEDE has conceptualized this Qualifying Examination as a tool to screen and select students who have started their engineering studies with the hope that their first two years of enrollment have prepared them for their professional courses. The learning they have gained will be a gauge to determine whether they are qualified to continue to pursue their engineering studies. It is the intention of the CEDE to prepare the participants further through the Qualifying Review before the actual students selection. Hence, the objective for accepting quality students and graduates may be justified. In this light, the purpose of the present study is to find out if the Qualifying Review is effective at improving the performance of students in the Qualifying Examination. Specifically, it aims to answer the following questions:

1. What is the profile of the CEDE students who took the Qualifying Examination in terms of :
    a. Gender b. Course c. Number of hours of review classes attended
2. What are the pretest scores of the CEDE students in the Qualifying Examination grouped according to:
    a. Male b. Female c. Combined Group
3. What are the posttest scores of the CEDE students in the Qualifying Examination grouped according to:
    a. Male b. Female c. Combined Group
4. Is there a significant difference between the pretest and the posttest scores of the students who took the QE grouped according to:
    a. Male b. Female c. Combined Group

Method

Study Environment

The College of Environmental Design and Engineering (CEDE) is an academic unit of Baliuag University, an autonomous university located in Region III, province of Bulacan.

It is a private university with seven academic units which include the College of Arts and Sciences, College of Business Administration and Accountancy, College of Education, College of Environmental Design and Engineering, College of Information Technology Education, College of Nursing, and the Graduate School. It has two non-academic units such as School of Hospitality and Tourism Management, as well as School of Technical Courses.

The College of Environmental Design and Engineering where the study was conducted offers six engineering programs which include Bachelor of Science (BS) in Civil Engineering, BS in Computer Engineering, BS in Electrical Engineering, BS in Electronics Engineering, BS in Industrial Engineering and BS in Mechanical Engineering. In addition to the six programs is the School of Technical Courses which is supervised by the Technical Education and Skills Development Authority (TESDA).

Participants

The participants are composed of sixty-six (66) incoming third-year students, twenty-four (24) of whom are female and forty-two (42) are male, enrolled in the six programs offered. Their ages range from 18 to 19, typical ages of students who are starting to pursue a college degree. As to program of studies, twenty-six (26) are enrolled in BS in Civil Engineering, seventeen (17) in BS in Electronics Engineering, eleven (11) in BS in Mechanical Engineering, five (5) in BS in Industrial Engineering, four (4) in BS in Computer Engineering, and three (3) in BS in Electrical Engineering.

Pretest-Posttest Instrument

To assess the knowledge of the participants, CEDE developed a comprehensive multiple-choice examination that contains questions covering Mathematics, Statistics, and Physics courses offered in the first- and second-year levels of the engineering curriculum. The questions included in the QE were proportioned based on the number of contact hours per topic during the Qualifying Review (QR). These include Algebra and Advanced Algebra – 8 items, Trigonometry – 8 items, Solid and Analytic Geometry – 6 items, Differential and Integral Calculus – 10 items each, Probability and Statistics – 8 items, and Physics 1 and 2 combined – 10 items. The QE is a 60-item, 3-hour board examination-type multiple-choice

assessment of the knowledge and learning gained for the duration of the QR of the second- year students. The 60-item test questions were randomly selected from a pool of examination questions contributed by faculty members who handled the review classes during the two-trial run of the program. Ten *easy*, ten *average-difficult*, and ten *difficult* questions were contributed by each faculty in the pool of questions included in the test bank.

The pretest was administered right after the final examination of the second semester and before the start of the summer term. The pretest is the same QE examination developed by the CEDE. It was the same examination administered as the posttest right after the end of the QR and before the enrollment for the first semester of the next school year. The students were allowed to use calculators during the examination.

Qualifying Review

Since the inception of the Qualifying Examination in SY 2013 – 2014, Qualifying Review was conceptualized to be a partner of the QE to give consideration to students who already have spent their two years of studies with the CEDE. This justifies its implementation by giving parents, whose children are negatively affected, some hope that the CEDE cares for its students by preparing them for the test. The parents were informed that the test would determine whether their children could still continue with their program of studies or not. At the same time, the two-year trial run prepared the students further in assimilating the screening process adopted to secure the quality of students and its graduates. Also, further refinement of the mechanics of the program implementation was given attention for its continuous implementation and its effectiveness as a part of the retention policy of the CEDE.

The Qualifying Review is a 3-unit special course developed by the CEDE which covers different topics. However, the topic in Chemistry, one of the science courses included in the first year of the engineering curriculum, was not included in the QE as the said subject is being offered by the College of Arts and Sciences and taught by CAS faculty. The review classes were conducted every Saturday during the summer term and were handled by full-time faculty members. The same faculty who taught the same subjects during the

students' enrollment in the first- and second-year levels of the engineering curriculum were assigned. Each topic was allotted a specific number of contact hours which was determined based on the number of lecture units in the curriculum as shown in Table 1. The review was comprehensive as only the salient features of each course were covered such as the principles and methods of solving problems. The use of technology in the delivery of topics and the use of calculators in problem solution were encouraged.

Table 1

Distribution of the Contact Hours in the Qualifying Review

Course	No. of units in the curriculum	No. of review contact hours
Pretest		3
Algebra & Adv. Algebra	3	8
Trigonometry	3	6.5
Analytic and Solid Geometry	4	5
Differential Calculus	4	8
Integral Calculus	4	8
Physics 1 & 2	6	9
Statistics	3	6.5
Posttest		3
Total	31	57

As shown in Table 1, both the pretest and the posttest are allotted 3 contact hours each and each topic is given 5 to 8 contact hours.

Results

Data were generated, and statistical tests were used to find out if a significant difference existed between the pretest and the posttest. Another test, the paired-sample *t*-test, was applied to each of the three groups.

The study further examined the effectiveness of the QR for both the male and the

female groups to determine if the QE has affected the student participants based on their gender. Traditionally, engineering as an academic program was solely enrolled by the male; however, as technology advanced, more engineering disciplines were added, opening the doors for the female population. Now, more women are into Civil Engineering, Electrical Engineering, Mechanical Engineering, and the likes, and they have proven their mettle in these disciplines.

The results of the study (see Appendix, p.18) shows the pretest-posttest scores obtained by each participant identified by his/her student number. The highest score in the pretest is 35 points, and the lowest score is 12 with a range of 23 points. The highest score in the posttest is 54 points, and the lowest score is 18 with a range of 36 points. The pretest-posttest lowest score has a difference of 6 points while the pretest-posttest highest score has a difference of 19 points. The highest difference in scores for a single student is 35 points where the said student obtained a score of 12 in the pretest and a score of 47 in the posttest. The study also revealed that two students have lower posttest scores than the pretest, a negative difference, and another two students have equal scores in both the tests which means that the QR had no effect, whatsoever, on their learning. With a passing cut-off score of 60% which is equivalent to a score of 36 points, only 38 students, out of the 66 who participated, passed. This is equivalent to 57.6% of the 66 participants. This means that those whose scores belong to the upper 60% are qualified to continue with their program of studies. Those whose scores were 50% to 59% were allowed to continue in engineering; however, they could only be permitted to enroll in the non-board engineering program. Those who scored lower than 50% are advised to shift to a program other than engineering.

Table 2

Frequencies of the Number of Hours Spent in Review Classes for Both Genders

Course	No. of Hours Spent For Review Classes	Gender	
		Male (*f*)	Female (*f*)
Algebra and Advanced Algebra	8	6.05	6.67
Trigonometry	6.5	5.55	5.98
Analytic and Solid Geometry	5	4.24	4.67
Differential Calculus	8	6.67	6.33
Integral Calculus	8	6.85	7.00
Physics 1 & 2	9	7.10	6.92
Statistics	6.5	5.79	6.19
Total	51	42.25	43.56
Percent	100	82.84	85.80

Table 2 shows the mean of the frequencies of the number of hours spent by both the male and female group per course. As shown, the female group spent more hours for the duration of the review, showing 85.80% of the total 51 hours of contact sessions attended. This reveals their diligence and responsibility towards learning which paid off based on the results of the posttest.

Table 3 shows the results of the statistical treatment on the pretest scores.

Table 3

Pretest Mean, the Quantitative Description, and the Standard Deviations

Gender	Pretest		
	Mean Score	Qualitative Description	Standard Deviation
Male	21.81	Low Mastery	5.232
Female	23.17	Low Mastery	4.410
Combined	22.33	Low Mastery	5.027

Legend:

56 - 60	*Mastered*
46 - 55	*Closely Approximating Mastery*
36 - 45	*Moving Towards Mastery*
26 - 35	*Average Mastery*
16 - 25	*Low Mastery*
6 - 15	*Very Low Mastery*
0 - 5	*Absolutely No Mastery*

The mean scores for the male group has a value of 21.81 with a qualitative description of low mastery based on the seven-point scale. For the female group, the mean is 23.17, with the same qualitative description. For the combined group, the mean score is 22.33 which reveals the same low mastery level across students. *Low mastery* implies that the students may have forgotten the fundamentals of the courses taught during their 1st and 2nd year level of studies. It is possible that because the students are in transition and that they are still adapting to College life, many of the learnings gained may not have been assimilated properly by many of them. Also, shown in the table are the values of the standard deviation with the male group exhibiting a high value of 5.23, which implies greater dispersion of the pretest scores from the mean of all pretest scores of the male group as computed.

Table 4 shows the statistical treatment for the results of the posttest conducted right after the review.

Table 4

Posttest Mean, the Quantitative Description, and the Standard Deviations

Gender	Pretest		
	Mean Score	Qualitative Description	Standard Deviation
Male	34.43	Average Mastery	7.552
Female	41.46	Moving Towards Mastery	7.524
Combined	37.48	Moving Towards Mastery	7.762

The mean score of the male group (34.43) showed a marked increase compared to the mean score registered for the pretest with a descriptive equivalent of *average mastery*.

However, the mean score of the female is group 41.46 which is higher value with a marked difference of 18.29 points, and a qualitative description interpreted as *moving towards mastery*. The standard deviation registered for the female group is 7.52, with a standard deviation of 7.552 for the male group. This implies that the scores of both male and female groups have the same dispersion characteristics based on their respective mean scores.

Table 5 shows the results of the paired-sample test using the *t*-test.

Table 5

Statistical Results of the Paired-Sample Tests

Gender	Mean Score		Difference	Computed	Critical t	Decision	Remark
	Pretest	Posttest		*t*	(α=5%)		
Male	21.81	34.43	12.62	10.588	2.423	Reject H_o	Significant
Female	23.17	41.46	18.29	12.363	2.500	Reject H_o	Significant
Combined	22.33	37.48	15.15	15.777	2.390	Reject H_o	Significant

With the result of the paired-sample *t*-test being significant in all groups, it can be concluded that these students' knowledge was greater at the end of the review than at the beginning of the review. This increased learning occurred in addition to the effects of students' prior knowledge as measured by the pretest. As a consequence, it is deemed likely that the gains in learning can be attributed to the students' enhancement of previous learning during the QR which means that the QR served its purpose. Hence, it is an effective tool in preparing the students for the posttest. Also as shown, it is apparent the female group has absorbed more of the enhancement of the previous learning due to the qualifying review than the male group.

Discussion

The results reveal statistically significant gains in knowledge for both male and female, as well as the combined incoming third-year engineering students. The pretest-posttest instrument documents consistent improvement in student learning for both gender; however, it shows slightly higher means for both pretest and posttest scores registered by the

female respondents as against the male, as well as the *mean* registered for the combined group. Also, the female group registered lower standard deviation as compared to the male and the combined group. These data imply that slightly greater improvement has been registered in knowledge gain by the female members.

For the combined group, an average of slightly higher than 15 percent increase in correct responses between the two administered tests was documented. This increase may be attributed to the enhancement of previous learning gained, the re-acquisition of the skills in solving mathematics problems, and further understanding of the mathematics principles learned in their first two years of enrollment in the engineering programs. Pretest-posttest knowledge gain must have been influenced by the content, presentation, and delivery of the topics that effectively refreshed the knowledge and understanding of mathematics, statistics, and physics of the incoming third-year students and not of their test-taking skills prior to the review.

Implications on Pedagogy, Learning, and Assessment

The study has implications on the areas of student learning, pedagogy, and assessment which are relevant to all faculty and especially to those who are teaching mathematics and engineering. With the integration of pretest-posttest design into their mathematics and engineering science courses, they can generate data that may measure the degree of learning gained by the students from a particular strategy or teaching method adopted. Hence, they may change or enhance their teaching strategy/method as a response. However, it should be noted that another possible step to take is to examine the relative effectiveness of different teaching strategies for instruction.

In this study, finding suggests that students perform better through refresher courses as has been practiced and demonstrated in the licensure examination even though as Delucchi (2014) claims, "*The results are by no means representative of all students or institutions, so the conclusions drawn are best viewed as tentative. Clearly, students performed better, on average, on the posttest*." As such the pretest-posttest design may be included as an assessment to identify those who performed poorly or those students "at-risk"

for remediation early in their third year of enrollment. Review sessions or course integration sessions before every major or term examination may be included in the teaching and learning strategies of the faculty.

Both the instructor and the students can best benefit from the pretest-posttest course design. Posttest items where students performed poorly can be revised and given more emphasis or longer class time. Pretest, on the other hand, can identify students' prior knowledge of course content which may give clue to the faculty to spend less time on those areas familiar to the students to compensate for those poorly performed items. Students identified to perform poorly can be grouped with those who scored high on the pretest to work on collaborative learning projects (Delucchi, 2014) as enhancement to review classes.

The results of the students' pretest-posttest demonstrate also the effect of teaching strategies relative to students' characteristics as shown where the female respondents demonstrated greater improvement of previously gained learning. Faculty members can design innovative strategies to address or minimize differences between the male and the female groups such as cooperative group activities and/or collaborative approach to learning where the females compliment the male members to produce balanced/equal learning for both.

As the University has implemented the Outcomes-Based Education (OBE) model in engineering education, compliance with professional and government guidelines must rely on assessment of students. Pretest-posttest course design clearly documents and demonstrates when learning has taken place in the classroom. With increasing adoption of technology application in the classroom teaching, the need for practical and accessible ways to determine if the method/strategy is effective or not must be in place. Faculty members must have a ready tool and should be conscious of the most important assessment goal which is the improvement of students' learning.

Conclusions and Recommendations

The two-year trial run of the QE complimented the first full-implementation of the said program, and have shown the efficacy of the QR to screen incoming third-year students

who would enroll in the professional courses. The results of the posttest indicate substantial knowledge gain of the participants as against the pretest scores. The pretest-posttest design used in the study showed its appropriateness to assess learning gained through the Qualifying Review. The review sessions effectively refreshed the participants' previous learning gained in their first- and second-year levels of enrollment in the CEDE. Their re-acquired skills in solving mathematics problems enhanced their understanding of the mathematics principles they previously learned.

Pretest-posttest design can be more applicable in the assessment of teaching and learning strategies and methods in mathematics and engineering. Hence, the different departments of the CEDE must exert effort to explore further pre-post-test designs and other assessment methods. This will help them not only to determine improvement of students' learning but also to comply with professional or government guidelines. However, since it is the first full-implementation of the QRQE, further refinement of the test instrument is necessary. A true experimental study is further recommended using the improved instrument.

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Appendix

Results of the Qualifying Examination with the Pretest and Posttest Scores

No.	Student No.	Pretest	Posttest	No.	Student No.	Pretest	Posttest
1	141-0144	32	54	34	141-0392	22	37
2	141-0367	29	52	35	151-0950	23	36
3	141-0100	28	52	36	141-0073	28	36
4	141-0004	27	51	37	142-0042	17	36
5	141-0736	26	50	38	132-0018	22	36
6	141-0770	26	48	39	141-0571	21	35
7	141-0120	30	48	40	141-0391	20	34
8	141-0345	27	47	41	141-0603	15	34
9	141-0408	12	47	42	141-0677	34	33
10	131-0499	25	47	43	141-0326	28	33
11	141-0563	21	45	44	132-0042	23	33
12	141-0865	20	45	45	101-0001	20	33
13	141-0084	25	45	46	141-0587	26	33
14	141-0453	25	44	47	141-0070	25	31
15	141-1069	23	44	48	141-0069	13	30
16	141-0123	25	44	49	151-0983	22	30
17	141-0971	19	42	50	151-0934	17	30
18	142-0033	23	42	51	141-0436	19	30
19	141-0465	16	42	52	141-0659	21	30
20	141-0441	24	41	53	101-0198	19	29
21	141-0764	19	41	54	152-0054	24	28
22	141-0369	19	41	55	141-0082	16	28
23	141-0868	23	41	56	141-0284	24	28
24	141-0244	27	41	57	151-0866	21	27
25	141-0013	18	40	58	141-0548	21	27
26	141-0716	22	40	59	141-0744	17	27
27	141-0021	21	40	60	141-0527	25	27
28	081-1212	14	40	61	141-0016	13	26
29	141-0588	14	39	62	141-0229	26	26
30	141-0095	24	39	63	141-0446	16	25
31	141-0366	21	38	64	141-0115	22	25
32	141-0650	35	38	65	141-0292	23	23
33	142-0002	29	38	66	151-0945	20	18