Using a Simulation Activity in an Introductory Management Accounting Course to Enhance Learning

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Abstract

This paper reports on the use of an experiential learning activity designed to provide an improvement in student comprehension of management accounting concepts. The students who participated in the activity (treatment group) performed better, on average, than the control group. The findings were based on the comparison between the groups regarding performance in a mid-semester test and a final exam question. The results suggest that the experiential learning activity offers an important alternative teaching tool with the potential to enhance learning outcomes.

Keywords: accounting education, experiential learning, role-play, simulation activity.

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Introduction

The traditional lecture and tutorial approach to teaching in universities has been criticised for failing to impart a deep understanding of the relationship between theory and practice (Saudagaran, 1996), as well as being less effective in developing problem solving skills and the ability to apply knowledge (McKeachie *et al*., 1990). According to Neral and Ray (1995), one possible approach that would address this failing is to provide students with an in-class experience designed to meet the learning requirements by engaging students in the learning experience.

The accounting education literature is replete with examples of instructional case studies involving simulation and role-play activities intended to assist the learning process (Apostolou *et al*., 2001; Watson *et al*., 2003; Watson *et al*., 2007). However, little attention has been given to empirically testing the validity of the assumption that such activities do improve students' understanding of accounting concepts. The purpose of this study is to empirically investigate whether an activity such as a role-play simulation does result in an observable difference between students and whether that difference is statistically significant. As a teaching strategy, a simulation activity allows learners to gain personal experience from being actively involved, as opposed to the traditional passive learning approach (Herbert, 2000). This paper contributes to the literature by providing insights into the techniques used to engage students and facilitate learning using a role-play simulation.

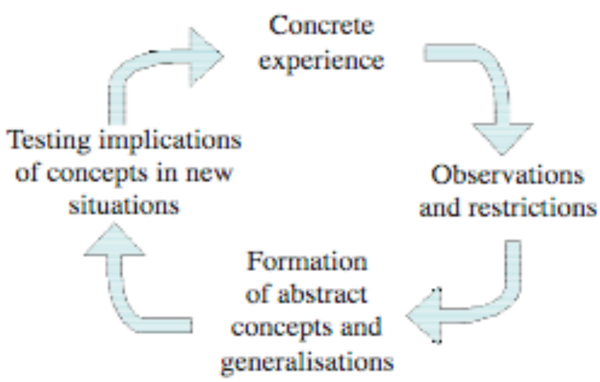
Review of Literature

Simulation activities such as role-play have been used as an educational technique, dating back years to the Chinese games of Wei-Hai (van Ments, 1989). According to van Ments, role-play is a student-centred teaching technique which, because students are involved in the activity, can induce favourable motivational effects and learning (learning by doing). Simulation activities permit students to learn by participating in the operations of a particular business process, albeit vicariously. This prompts students to construct their own mental representations of the particular business process, rather than continuing the traditional behaviour of attempting to discern what they think will be asked in the final exam (Springer & Borthick, 2004).

Research by Dekkers and Donatti (1981) found simulations such as role-play to be more beneficial, in terms of motivating students to learn whilst also improving retention and application of knowledge, when compared to the traditional lecture method of teaching. However, Dekkers and Donatti (1981) prefaced their finding by adding that the most suitable approach to maximising cognitive learning and retention would be to use simulations and role-play as a supplement to traditional teaching activities. Bernstein *et al.* (2002) found that students' motivation to learn was increased by the inclusion of a simulation activity in an introductory first year course in Political Science. They reported an observed improvement in overall student performance in the course; however, they did not provide any data or statistical analysis to support this claim. Adams *et al.* (1999) reported the results of a standard survey instrument which asked students to indicate on a likert scale the extent to which each item from a list had assisted in their learning. Whilst the authors provided the mean responses, which indicated that students perceived the role-play activity to be a benefit to their learning, no statistical analysis was conducted to test whether significant differences in learning had taken place. By contrast, Polito *et al*. (2004) presented ANOVA analysis which showed significant increased recollection and application of operations management concepts in their introductory operations management course. However, the research to date has yet to empirically test the learning outcomes in the performance of students in an examination situation and to compare results against a control group. The gap in the literature suggests a need to provide testing of the theoretical constructs.

In the educational literature, learning and experience appear to be inter-related constructs. As Kolb (1984, p. 38) explained, "Learning is the process whereby knowledge is created through the transformation of experience". Experiential learning is claimed (Svoboda & Whalen, 2005) to be one of the most effective ways to promote positive change in individuals. According to Kolb (1984) and Webb (2006), getting people actively involved encourages accelerated learning and accommodates the significant differences in learning styles within a single classroom activity. Experiential simulation activities have been used as a teaching strategy in discipline areas such as economics (Neral & Ray, 1995), sustainability (Svoboda & Whalen, 2004), marketing (Klink & Athaide, 2004) and various aspects of accounting (Gujarathi & McQuade, 2002; McPhail, 2005; Rose *et al.* 2005).

Experiential learning was defined by Kolb (1984, p. 41) as "the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience". The experiential learning model (Kolb, 1984) given in Figure 1 was drawn from the work of Lewin (1951). This model has been successfully used (Wheeler & McLeod, 2002; Svinicki & Dixon, 1987) as the framework for selecting and sequencing classroom activities. The model has been applied in the development and implementation of the role-play activity in this study.



Source: (Kolb 1984, p. 21)

Figure 1: The Lewin Experiential Learning Model

The central principle in the model is that immediate or concrete experiences provide a basis for observation and reflection, which ultimately become assimilated into abstract concepts that can be applied when similar circumstances are encountered (Webb, 2006). Implicit in Kolb's model is the notion that experience plays a critical role in the learning process. According to Sims (2002, p. 179), "experiential learning exercises can be a powerful form of teaching in which participants acquire new knowledge, skills and abilities by internalizing theory through guided practice". There are various examples that support the use of experiential learning to achieve the desired learning objectives of university courses. The literature in support of the benefits covers a wide cross-section of disciplines, such as business statistics (Hakeem, 2001), organisational theory (Blunsdon *et al*., 2003), marketing (Sautter *et al*., 2000) and macro economics (Gremmen & Potters, 1997).

Research (Feinstein, 2001) has shown that experiential learning activities can increase the capacity to evoke higher-order cognitive abilities in terms of problem solving skills and judgement. Specht and Sandlin (1991, p. 196) posited that this was because "experiential learning focuses on 'doing' in addition to the 'hearing' and 'seeing' that occur in traditional lecture classes". Several authors (Kolb *et al*., 1974; Specht & Sandlin, 1991) have quoted the ancient statement by Confucious ("I hear and I forget, I see and I remember, I do and I understand") as an explanation for the success of experiential learning. This is consistent with the proposition (Cook, 2008) that initially all learning comes from perceptions which are directed to the brain by one or more of the five senses. The research quoted by Cook (2008) is important because, by being aware of how people learn (Table 1) and how people remember (Table 2), the appropriateness of an experiential teaching activity can be demonstrated.

Table 1: How People Learn Through Their Senses

Sight	75%
Hearing	13%
Touch	6%
Smell	3%
Taste	3%

Source: Cook, 2008, p. 192

Table 2: How People Remember

From what they read	10%
From what they hear	20%
From what they see	30%
From what they see and hear	50%
From what they say	80%
From what they say and do	90%

Source: Cook, 2008, p. 192

In effect, the experiential learning (role-play activity) employed in this study required the use of the senses of sight, hearing and touch. Accordingly, the design of the role-play activity is congruent with the framework provide by the model in the following context:

1. The production line assembly provided the 'concrete experience' for the students.
2. The analysis of performance efficiency was the 'observation and reflection' component.
3. The discussion pertaining to alternative control and measurement systems underpinned the 'formation of abstract concepts and generalisations'.
4. The mid-semester test in conjunction with the final exam question provided confirmation of the final stage in the cycle by testing the extent to which students were able to employ the learned concepts in new situations.

The pedagogical justification for the use of role-play is derived from the emphasis it places on high participation, resulting in active rather than passive learning (Sims, 2002). Students who participated in the activity were expected to exhibit greater understanding and ability in applying what they had learned. These expectations led to the following research questions:

when the effects of a role play activity are compared to the effects of a traditional approach to teaching,

1. would there be an observable difference in the knowledge between the treatment group and control as measured by a test conducted on the topic?

2. would there be an observable difference in the knowledge between the groups as measured by a test conducted at the end of semester in which the topic is only a part of the exam?

3. would there be an observable difference between the results from the mid-semester test and the final exam question of the groups? In effect was there support for the literature that such an activity would produce long-term retention of knowledge?

From these research questions the following three null hypotheses were developed.

Null Hypotheses

H_{01}: There will be no difference in the academic performance (results of the relevant questions from the mid-semester test) between the treatment group and the control group.

H_{02}: There will be no difference in the academic performance (results of the relevant final exam question) between the treatment group and the control group.

H_{03}: There will be no difference in the academic performance in the initial testing (results of the mid-semester test) as compared to the testing at a latter time (end-of-semester final exam) between the treatment group and the control group.

Method

This study involved the application of a role-play activity based on a manufacturing production line process designed to effectively supplement and support the traditional management accounting topic. Students were engaged in the activity through direct, hands-on responsibility for the manufacturing process, as well as being required to reflect on the outcomes of the activity using management accounting techniques. Adams *et al*. (1999) presented a method for the implementation of the Californian Car Company simulation in what they referred to as a serial-case approach to support learning and understanding of managerial accounting principles. The California Car Company activity uses LEGO™ blocks to simulate the manufacturing production line. The Californian Car Company simulation activity provided the basis for testing the validity of the claims that a role-play teaching strategy can result in better learning and understanding on the part of students. The California Car Company was selected because it is a physical simulation that creates an environment conducive to experiential learning.

The participants in the experiential learning activity (treatment group) were 72 undergraduates enrolled in an introductory management accounting course in a business faculty. There were 12 production lines with 6 participants assigned to each production line. The jobs assigned were Chassis Material Handler, Chassis Assembler, Final Assembly Material Handler, Final Assembler, Inspector, and Accountant. The control group consisted of 113 undergraduates enrolled in the same introductory management accounting course. All tutorials addressed the same topics and the same homework requirements. All students received the same mid-semester test and final exam. No pre-test was conducted because this topic introduced new material which had not previously been covered in this course or any other first-year course. This possible limitation is an aspect that may be explored by future research.

The treatment group consisted of 28 (38%) females and 44 (62%) males whilst the control group had 45 (40%) females and 68 (60%) males. This was not a significant difference ($t = -0.887$, $df = 183$, $\alpha = 0.376$, equal variances assumed, Levene's test for equality of variances not significant $F = 3.369$, $\alpha = 0.068$). Therefore, gender is not expected to affect the results of this study (Lopus, 1997; Lipe, 1989).

Prior research (Gratton-Lavoie & Stanley, 2009; Jones & Fields, 2001; Bieker, 1996; Doran *et al*., 1991) reported that age and grade point average (GPA) scores can have a positive affect on students' performance in a course. Thus, age and GPA scores could act as confounding or moderating variables. To test for a possible confounding effect in academic abilities between the two groups, the GPA for each student was obtained and these scores are presented in order for the two groups in Table 3. To gain more meaningful data, the GPA scores were collapsed into categories. Collapsing or recoding nominal data is a common approach to acquire useable data (Alreck & Settle, 1985, p. 278). A t test was performed ($t = -1.606$, $df = 173.89$, $\alpha = 0.110$, equal variances not assumed, Levene's test for equality of variances significant $F = 4.186$, $\alpha = 0.042$); this indicated that there was no significant difference in the GPA scores between the two groups.

Table 3: Categories of Student GPA Scores

GPA	Treatment Group	Control Group
3.5 - 4.0	0	3
3.0 - 3.49	4	13
2.5 - 2.99	12	19
2.49 - 2.0	16	21
1.99 or <	40	57
Total	72	113

The ages of the students in the two groups were also collapsed into categories (Table 4). A t test was performed ($t = -0.774$, $df = 183$, $\alpha = 0.440$, equal variances assumed, Levene's test for equality of variances not significant $F = 0.025$, $\alpha = 0.876$); this indicated that there was no significant difference in the ages between the two groups.

Table 4: Categories of Student Ages

Age	Treatment	Control
18 <	28	40
19 - 22	36	57
23 - 26	6	11
27 - 30	2	4
31 >	0	1
Total	72	113

Overview of Activity

Tutorial groups were randomly selected to participate in the experiential learning activity. The tutor randomly selected teams comprising six students. The tutor assigned responsibilities to each of the team members and provided them with a set of instructions (job descriptions). The jobs specific to this activity were Chassis Material Handler, Chassis Assembler, Final Assembly Material Handler, Final Assembler, Inspector, and Accountant; the instructions and details are provided in Appendix A. The instructions provided to individuals were derived from the California Car Company Manual (Adams & Pryor, 2000). However, unlike the full requirements suggested in the California Car Company Manual, this activity required students to construct one type of vehicle only; this variation was due to the limited availability of LEGO™ blocks.

Each team was allocated to a production line, which consisted of tables joined together, with LEGO™ blocks positioned as raw material inventory at the different work stations. Teams advised whether they were subject to an incentive scheme or not. There were two incentive schemes, one intended to reward maximum production output and the other to reward quality production. The tutor initially demonstrated how to assemble a vehicle. Students were given 3 minutes to produce one complete vehicle before commencing the full simulation. The production time allowed was 30 minutes.

The reflective observation stage of the experiential learning model requires structured discussion in order for students to achieve conceptualisation and learning (Lederman, 1992). This process has been referred to as the debriefing stage (Sims, 2002; Dennehy *et al*., 1998). At the completion of the 30-minutes production period, the designated accountant from each team was asked to report on the amount performance outcomes using a standard report format (see Appendix B). The tutor then facilitated a discussion on the performance efficiency of the production line and the relative influence of the incentive schemes. Discussion of the discrepancies forced students to consider their own assumptions and to seek clarification, which offered the opportunity for making links to appropriate theory and models embedded in the learning objectives. The level of detail and complexity of the production line process became apparent to the students when they were required to describe the cost allocation method and to calculate the equivalent units of production. To assist in the calculation, students were provided with a general schedule for determining equivalent units (see Appendix C). The learning objectives of the role-play were reinforced during the debriefing process. Table 5 provides a summary of the key concepts that were discussed in the debriefing session, highlighting the context employed to facilitate meaningful discussion.

Table 5: Debriefing Topics

Key Concept	Focus Questions	Discussion Points
Incentive Schemes	Which scheme worked best? Why were there differences?	Differential effects of incentive schemes! Impact of team behaviour on performance! Comparison of teams and performance! • Students came to realise the problems associated with an incentive scheme that encouraged the wrong type of behaviour! • Discussion also examined whether the budget was an achievable number and questions were raised regarding how it was determined!
Bottlenecks	Where were the bottlenecks? What were the causes of the bottlenecks?	Matching demand with capacity! Role assignments and design issues! Theory of Constraints – what contributed to defects in production? Root causes of production line failure – • This required those making the observation to look behind the obvious to seek out the basic reasons behind the condition.
Quality	What happened when defects were made in production? What changes would you consider to correct the problems?	Defects cause bottlenecks due to rework! Cycle Time vs Average Production Time! • Cycle Time was explained as relating to the time from start to end (which would under normal circumstances be from ordering the materials and after inspection) • Average Production Time was more focused on just production time commencement of production until a unit comes off the production line!
Costing	What were the costs of production? How are the costs allocated? How does the production process relate to the accounting method?	Prepared the equivalent units of production schedule for each work station! • Discussed arbitrary nature of the various assumptions used to make calculations! • Reviewed the calculations required in the schedule of equivalent units! • Considered the different stages of production – pointed out that they were in varying states of completion! (Supported by visual observation of the work stations)! Cost based analysis for decisions! Considered how costing focuses on department activities –

Results

The testing of the first null hypothesis involved comparing the results from the mid-semester test between the two groups. For the purpose of analysis the student scores were reported as a percentage. The mid-semester test results, as summarised in Table 6, reveal that the mean of the treatment group ($\bar{X}_1$ = 61.86) was higher than that of the control group ($\bar{X}_2$ = 51.27).

Table 6: Group Statistics of Mid-semester Test Results

	Group	N	Mean	Std. Deviation	Std. Error Mean
Mid-semester	1	72	61.86	16.74	1.97
	2	113	51.27	28.03	2.64

Analysis of the means and standard deviations were conducted using the student t test. The results from the mid-semester test for the treatment group were significantly higher (t = 3.216, df = 182.35, α = 0.002, equal variances not assumed, Levene's test for equality of variances was significant F = 29.075, α = 0.000) than for the control group. The treatment group performed better in the mid-semester test than the control group. The null hypothesis was therefore rejected.

The testing of the second null hypothesis involved comparing the results from the final exam question between the two groups. The final exam question on the topic consisted of sub-parts, which amounted to a total of 12 marks. For the purpose of analysis the scores are reported as a percentage. The results for the final exam question, summarised in Table 7, reveal that the mean of the treatment group ($\bar{X}_1$ = 55.07) was higher than that of the control group ($\bar{X}_2$ = 47.52).

Table 7: Group Statistics of Final Exam Question Results

	Group	N	Mean	Std. Deviation	Std. Error Mean
Final exam question	1	72	55.07	18.72	2.21
	2	113	47.52	27.57	2.59

The t test revealed that the treatment group results for the final exam question were significantly higher ($t = 2.216$, $df = 182.23$, $\alpha = 0.028$, equal variances not assumed, Levene's test for equality of variances significant $F = 15.565$, $\alpha = 0.000$) than for the control group. The treatment group therefore performed better in relation to the final exam question than the control group. The null hypothesis was therefore rejected.

Additional analysis was conducted to test for any possible influence of age, gender or GPA scores on the performance of students. The GPA score was found to be significantly correlated to student performance in both groups, age was significantly correlated in the control group, and gender was not significantly correlated in either group. The correlations for the treatment group are presented in Table 8 and for the control group Table 9.

Table 8: Correlation Results for the Treatment Group

	Mid-semester Test	Final Exam Question	GPA	Gender	Age
Mid-semester Test	–	.854**	.564**	.031	.023
Final Exam Question	.854**	–	.543**	.061	.063
GPA	.564**	.543**	–	.084	–.083
Gender	.031	.061	.084	–	.122
Age	.023	.063	–.083	.122	–

** Correlation is significant at the 0.01 level (2-tailed test).

Table 9: Correlation Results for the Control Group

	Mid-semester Test	Final Exam Question	GPA	Gender	Age
Mid-semester Test	–	.901**	.621**	.034	.314**
Final Exam Question	.901**	–	.635**	.001	.293**
GPA	.621**	.635**	–	–.121	.212*
Gender	.034	.001	–.121	–	–.041
Age	.34**	.293**	.212*	–.041	–

** Correlation is significant at the 0.01 level (2-tailed test).

* Correlation is significant at the 0.05 level (2-tailed test).

Discussion

The results of this study were consistent with the expectations gained from the literature and prior research, particularly the arguments that role-play can enhance learning (Adams *et al*., 1999) and improve the recollection of students (Polito *et al*., 2004). The findings were that the students who participated in the experiential learning activity performed better, on average, than did the students in the control group, who were not exposed to the experiential learning activity.

The framework as proposed by Svinicki and Dixon (1987), derived from the Kolb (1984) model, provided a useful reference for design of this experiential learning activity. In this role-play, students were provided with an opportunity to learn from observation, active experimentation, concrete experience and abstract conceptualisation. This made the activity well suited to the study of the management accounting issues in a manufacturing environment. The debriefing process may have contributed to the students achieving deep learning. As argued by Simms (2002), debriefing is essential to clearly establish the links between the learning objectives and the experiential activity. The results from the mid-semester test and the final exam question indicate that the particular management accounting knowledge gained from the role-play activity was sustained for a longer time period. The evidence is that the treatment group were able to better apply their learning after a longer period than the control group. This is consistent with the findings of the prior research (Dekkers & Donatti, 1981; Polito *et al*., 2004), which reported finding that experiential learning leads to knowledge being retained for a longer period of time.

The finding of a positive correlation between GPA score and performance in both groups was not unexpected and is consistent with prior research (Gratton-Lavoie & Stanley, 2009; Jones & Fields, 2001; Bieker, 1996; Doran *et al*., 1991). This supports the argument that the role-play was a determining factor in the overall difference between the groups. The finding of a positive correlation between age and performance only in the control group provides support for the argument that the role-play was a determining factor. Prior research (Gratton-Lavoie & Stanley, 2009; Jones & Fields, 2001; Bieker, 1996; Doran *et al*., 1991) reported a link between age and performance, and this is consistent with the results for the control group. By contrast, the lack of a correlation between age and performance in the treatment group is considered to be evidence that the role-play was a more effective learning experience for all ages.

The role-play provided an ideal opportunity to explore a variety of issues within the context of a simulated manufacturing environment. The role-play was designed to be manageable within a typical semester and without any negative impact to a semester program. The key principle was the provision of guidance and direction during the activity in order to facilitate the learning experience of the students.

The results of this study should encourage greater use of experiential learning activities in accounting education. In terms of the role-play or any other form of simulation, when students are actively involved they become immersed in the experience, and this can provide a tangible context for improving their understanding of a range of concepts covered in accounting.

With student retention and attrition rates now a major concern, especially in first-year university courses, it is imperative that alternative teaching methods be identified and tested to determine their efficacy. This study has provided evidence that supports the claims in the literature (Dekkers & Donatti, 1981; Bernstein *et al*., 2002) that role-play can be used to motivate and enhance learning by engaging students in an experiential activity.

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Appendix A
Instructions

The instructions provided to individuals were derived with permission from the California Car Company Manual (Adams & Pryor, 2000).

Chassis Assembly (Compact)

Step 1. Center the yellow block "battery" under the black block "body panel".

Step 2. Attach the four wheels under the black body panel placing them next to the yellow battery.

Step 3. Attach two small, red mounts crosswise under each set of wheel "axles" to hold the wheels in place.

Final Assembly (Compact)

Step 1. Stack two red panels and attach on top of the black body base placing them one peg in from the end. Repeat on other end.

Step 2. Attach one small, red piece at each end of the body base.

Step 3. Attach the small yellow "solar panel/hood" on the front set of red panels.

Step 4. Attach one window on each set of red panels.

Step 5. Attach a large red "solar panel/roof" to the top of the windows.

Chassis Material Handler (inventory) ~ Instructions:

Point 1. You are not allowed to fill cups from inventory before the assembler calls for parts.

Point 2. The assembler can not call for parts until they have begun assembling the last chassis in the batch.

Point 3. If you grab or are given by your instructor a defective part (wrong colour), you must deliver it. You can not exchange it for a correctly coloured part.

Point 4. If you deliver too few parts, you must make a special delivery of the missing parts before you deliver the next batch of parts.

Point 5. If you deliver too many parts, you must retrieve those parts plus you must wait 30 seconds before you deliver the parts for the next batch.

Chassis Assembler ~ Instructions:

Point 1. You can not call for more parts until you have started assembling the last car in a batch.

Point 2. You must assemble defective (wrong coloured) parts, even if you have extra good parts.

Point 3. If the material handler delivers too many or too few parts, you must call the handler back to correct the situation before bringing parts for the next batch.

Point 4. On a separate sheet of paper, you must keep track of the approximate time you are idle.

Final Assembly Material Handler (inventory) ~ Instructions:

Point 1. You are not allowed to fill cups from inventory before the assembler calls for parts.

Point 2. The assembler can not call for parts until they have begun final assembly of the last chassis in the batch.

Point 3. If you grab or are given by your instructor a defective part (wrong colour), you must deliver it. You can not exchange it for a correctly coloured part.

Point 4. If you deliver too few parts, you must make a special delivery of the missing parts before you deliver the next batch of parts.

Point 5. If you deliver too many parts, you must retrieve those parts plus you must wait 30 seconds before you deliver the parts for the next batch.

Final Assembler ~ Instructions:

Point 1. You can not call for more parts until you have started assembling the last car in a batch.

Point 2. You must assemble defective (wrong coloured) parts, even if you have extra good parts.

Point 3. If the material handler delivers too many or too few parts, you must call the handler back to correct the situation before bringing parts for the next batch.

Point 4. On a separate sheet of paper, you must keep track of the approximate time you are idle.

Inspector ~ Instructions:

Point 1. Identify cars that have the wrong colour parts, improper assembly, and poor fit – these are defects.

Point 2. Cars that do not pass final inspection are to be set aside for rework at a later time.

Point 3. Count the number of defective cars and record the number on the report form under item 5.

Accountant ~ Instructions:

Point 1. Record the number of cars in work-in-process and finished goods ending inventory.

Point 2. Collect from the inspector the number of defective cars needing rework.

Point 3. Collect from the chassis and final assemblers idle time estimates for the assemblers.

Point 4. Calculate good units completed for cars, which equals: Ending Inventory Finished Goods – Beginning Inventory Finished Goods.

Point 5. Compute the average production time per unit. Average production is obtained by determining the number of seconds the simulation ran and dividing that number by the total number of good units produced. For example, if the simulation ran for 15 minutes and 25 good units were produced, you divide 900 seconds (15 minutes x 60 seconds) by 25 cars, for an average production time of 36 seconds per car.

Appendix B
Sample of Accountant's Report

Assembly Line Number		
	Recorded Value	
	Budget	Actual
Inventory Levels:		
Beginning Work-in-process		
Beginning finished goods		
Ending work-in-process		
Ending finished goods		
Good Units Completed		
Defective Units		
Cycle Time		
Average Production Time		
Assembler Idle Time		
Incentive scheme		

Appendix C
Sample of Schedule of Equivalent Units

	Production In Units	Materials		Conversion	
W-I-P at Start		% Complete	Units	% Complete	Units
Started &/or Transferred In					
Units to Account for					
Units completed & Transferred Out					
W-I-P at End					
Units Accounted for					