

# **Evaluation of Auto8Grade Grading Software**

## **Final Evaluation Report**

**For:**

**Department of Business Administration  
Faculty of Management Sciences, Prince of Songkla University**

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Evaluation of Auto8Grade Grading Software  
Client: Department of Business Administration,  
Faculty of management Sciences, Prince of Songkla University

**EXECUTIVE SUMMARY**

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The evaluation of Auto8Grade Grading Software is complete, and the final report is ready to be disseminated to relevant stakeholders. This summary discusses the evaluation objectives, research methods, findings and recommendations, in effort to evaluate Auto8Grade Grading Software to ensure that teachers will have ease-of-use valid grading software that they want.

**Objectives**

- 1) Determine if Auto8Grade Grading Software is accurate grading software.
- 2) Determine if Auto8Grade Grading Software has essential characteristics that teachers want.
- 3) Recommend how Auto8Grade Grading Software can be used more widely.

**Research Methods**

The evaluation was guided by descriptive method or nonexperimental research design method. Archival research and survey research accompanying with interviewing were used. The study samples completed a quantitative pencil and paper survey in addition to contributing to a qualitative interviewing. The evaluator studied and examined existing books to make sure that Auto8Grade Grading Software used an accurate process for 8-grade level grading system.

**Findings and Recommendations**

The evaluation revealed the following:

- 1) Auto8Grade Grading Software is accurate grading software for the reason that:
  - Teachers can trace back from all worksheets that created by Auto8Grade Grading Software that it used the accurate process as said in the books.
- 2) Auto8Grade Grading Software has essential characteristics that teachers want for the reason that:
  - The need assessment report that the developer studied before the software development said that the most two essential characteristics of grading software that teachers wants were ease-of-use and flexibility that teachers can adjust grade boundaries easily respectively.
  - Teachers satisfied in ease-of-use and flexibility of Auto8Grade. The most three satisfied characteristics are ease-of-use, providing descriptive statistics, and providing graph of score distribution respectively.
- 3) In order to increase number of teachers who use Auto8Grade Grading Software, the evaluator recommend the following:
  - The developer or the stakeholder should set some short time seminar for PR (public relation) this software.
  - The developer may improve this software so it can be generalized to be used for all grade level other than only 8-grade level grading system.

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## EVALUATION OF AUTO8GRADE GRADING SOFTWARE

### Section I • Description of the Program

#### *Description of the Evaluand*

This evaluation was conducted for the Department of Business Administration, Faculty of Management Sciences, Prince of Songkla University (PSU). The department head and the academic staff gave a fund from the department's income to Ms. Aree Limwudhikrajirath to develop Auto8Grade Grading Software. There are two main reasons for that fund. The department head wanted to stimulate teachers in the department to do researches and many teachers need some grading software to help them send their grade reports to the registration unit of the university on time as well.

For many teachers, it is such a few of time teachers have to collect all students' works and examinations, and transform them to be each student's grade. In PSU, midterm exam will last 1 week, while final exam will last 2 weeks. After the last day of final exam, teachers have to examine students' exam, collect all students' works and exam scores, transform them to grades and submit all subjects' grade in about 7 days. For teachers who their class size are not big, it maybe no problem to do their jobs in 7 days, but for teachers with big class size, it rather rush week for them.

The administrators of the Department of Business Administration, the Faculty of Management Sciences, Prince of Songkla University (PSU) perceived the crucial part of grading system and wanted to encourage the members of the department to do researches, so they gave fund from the department's income to develop grading software. The developer who received that fund taught subjects that relevant to both Statistics and software programming. Before developing Auto8Grade grading software, the developer did the need assessment and found that the most important characteristic of grading software that teachers want was ease-of use. However, they need flexible software that they can adjust the boundary of each grade level easily as well. An evaluation was requested to assure that Auto8Grade grading software is accurate grading software that serves the need of the teachers who use 8-grade level system. Moreover there is some attempt to make it generalize to be wide-spread grading software.

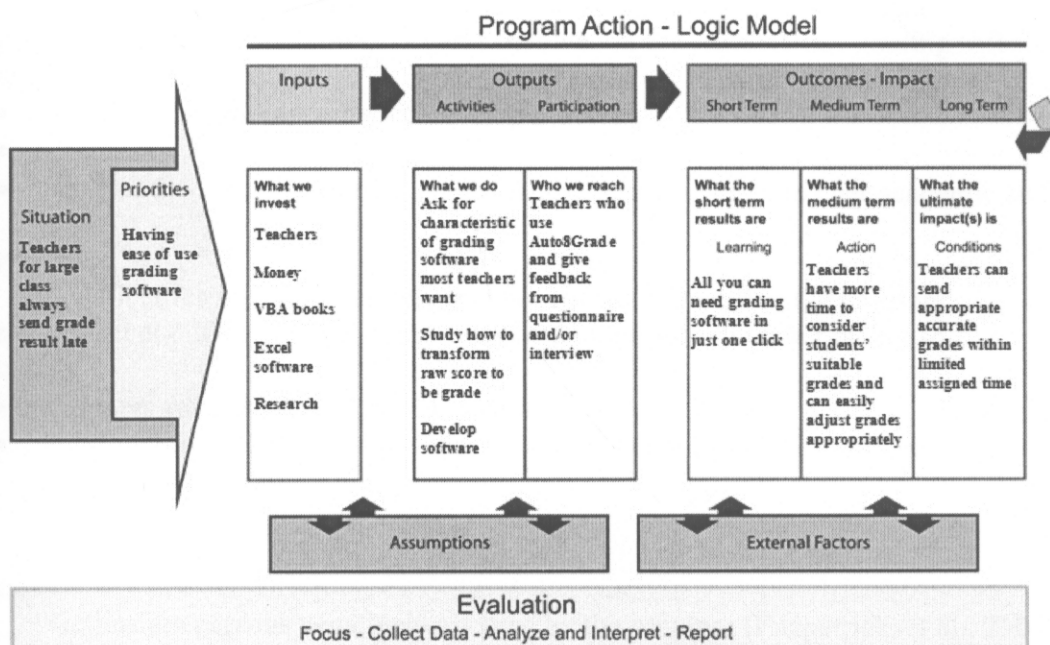
Logic Model Description for Auto8Grade Grading Software

A logic model is a model that the program staff develops. It can be used for program evaluation. It starts with the long-term vision of how program participants will be better off because of the program (Fitzpatrick, Sanders, & Worthen, 2004). The style of the logic model representative of the Auto8Grade Grading Software was chosen due to its lucidity in illustrating the CIPP model of evaluation. The focus of the CIPP model is on the program activities. CIPP is representative of Context, Inputs, Process and Product. Context evaluation assesses needs, assets, and problems within a defined environment. Input evaluation assesses competing strategies and the work plans and budgets of the selected approach. Process evaluations monitor, document, and assess program activities. Product evaluation part is divided into impact, effectiveness, sustainability, and transportability evaluations (Stufflebeam, 2002). All four of these elements were captured in the logic model of the Auto8Grade Grading Software. The diagram created to record and present the findings is in the appendix for the Auto8Grade grading software logic model.

## The Logic Model

### “AUTO8GRADE” GRADING SOFTWARE EVALUATION

*Click-and-Go Auto8Grade*



### *Evaluand Program Goals and Objectives*

The evaluator identified the program goals and objectives from the developer's proposal and need assessment report. The completed Auto8Grade grading software must have many crucial characteristics that most teachers need, which composed of:

- Ease-of-use, it can show each student's grade in 8-grade level system in just one click after all input data were already entered.
- Flexibility, teachers can adjust the boundary for each grade easily and Auto8Grade grading software will change each student's grade due to the new criteria.
- Descriptive statistics such as mean, standard deviation, maximum and minimum of the students' scores.
- Graph that show the distribution of the scores.
- Standard scores other than raw scores.
- Transparency, everyone can trace back the result that Auto8Grade grading software use the accurate grading process.

### *Description of Stakeholders*

Stakeholders are various individuals and groups who have a direct interest in and may be affected by the program being evaluated or the evaluation's results (Fitzpatrick, et al., 2004).

#### *Agents*

Agents are those persons involved in producing, using, and implementing the program (Fitzpatrick, et al., 2004). Agents involved in the Auto8Grade grading software included:

- Auto8Grade grading software developer
- Teachers
- Head of the Department of Business Administration, PSU and her academic staff

#### *Beneficiaries*

Beneficiaries are those persons who benefit from the use of the program (Fitzpatrick, et al., 2004). Beneficiaries involved in the Auto8Grade grading software included:

- Teachers who use 8-grade level system
- Possibly other teachers who want to use Auto8Grade grading software in any grade level system

#### *Victims*

Victims are persons negatively affected by the program (Fitzpatrick, et al., 2004). Victims involved in the Auto8Grade grading software included:

- Teachers who were not able to use Auto8Grade grading software



Section II • The Evaluation Research

*Evaluation Questions*

This evaluation was requested to ensure that Auto8Grade is accurate grading software that has essential characteristics that many teachers want. Moreover, the evaluation included questions about how can Auto8Grade grading software can be used more widely. The following questions were posed as evaluation questions in order to produce the most comprehensive and useful evaluation for Auto8Grade grading software:

- Is Auto8Grade accurate grading software?
- Is Auto8Grade Grading Software has essential characteristics that teachers want?
- How can Auto8Grade Grading Software be used more widely?

*Constraints and Barriers to the Evaluation*

*Time Constraints*

Time constraints of Auto8Grade grading software included the short time frame given to conduct the evaluation. Moreover, the evaluator had to do her ordinary work concurrently with this evaluation, so it was time constraint that the evaluator must manage her time.

*Description of How Evaluation Questions Were Generated*

Let's start from purposes of doing evaluations. "Evaluations are conducted to answer questions concerning program adoption, continuation, or program improvement" (Fitzpatrick, et al., 2004, p. 232). An evaluation strategy adapted for educational development by Baume and Baume (1995) from Nevo (1986) cited in Macdonald & Wisdom (2002, pp. 9-10) is in the following list:

1. Decide what is or are to be evaluated, and when.
2. Identify stakeholders in the project.
3. Identify stakeholders' questions and concerns.
4. Identify the criteria for judging answers to stakeholders' questions.
5. Devise and pilot the evaluation method and instruments.
6. Carry out the evaluation.
7. Report to the stakeholders.
8. Change project practice as necessary.
9. Review evaluation methods from time to time.

Evaluators' main responsibilities are to gather and interpret information that can help key individuals and groups improve efforts, make enlightened decisions, and provide credible information to the public (Fitzpatrick, et al., 2004). This evaluation was a consumer-oriented evaluation approach. Fitzpatrick, et al., 2004 state that "developers of products have come to realize, however, that using the checklists and criteria of the consumer advocate while the product is being created is the best way to prepare for subsequent public scrutiny. Thus, the checklists and criteria proposed by "watchdog" agencies have become tools for formative evaluation of products still being developed" (p. 101). "The most widely used methods of collecting data in consumer-oriented evaluations are stringent evaluation criteria and checklists, which provide consumers with defensible results on a wide variety of product factors (Fitzpatrick, et al., 2004, p. 109). Good start, great smart, as I began the evaluation process; I integrated several sources to come up with effective evaluation questions. The integrated sources include:

#### *The Client*

To gather the most information in order to generate the questions, evaluators need to communicate with the client, and keep in contact to make sure that the evaluation process is meeting the client's needs. I conducted both formal and informal meetings to ask general questions about current thoughts and the needs on the program.

#### *Expert Views*

It is a good idea to know the opinion of experts to gain a greater understanding of the program, as well as to generate the questions. Dr. Kathleen Kelsey was one of the helpful experts that suggested me generate comprehensive and direct questions for teachers to answer. In addition, the evaluator needed expert views in order to complete some questions that she lacked, such as the questions that are needed to be specific (Scriven, 1991).

#### *Literature Reviews*

The evaluator used literature reviews such as thesis and journal article to guide the evaluation process and adjust the knowledge and determination of them to apply for the evaluation.

#### *Evaluators Professional Judgment*

I used the divergent phase to collect a variety of evaluation questions from my stakeholders. I "throw a broad net" to encompass a wide variety of sources:

1. Questions, concerns, and values of stakeholders.
2. The use of evaluation "models," frameworks, and approaches as heuristics.
3. Models, findings, or salient issues raised in the literature in the field of the program.
4. Professional standards, checklists, guidelines, instruments, or criteria developed or used elsewhere.
5. Views and knowledge of expert consultants.
6. The evaluators' own professional judgment. (Fitzpatrick, et al., 2004, p. 234).

I used the convergent phase to narrow down the list of evaluation questions I collected from my stakeholders. I used Cronbach's thinking in proposing six criteria for determining which proposed evaluation questions should be investigated:

1. Who would use the information? Who wants to know? Who will be upset if this evaluation question is dropped?
2. Would an answer to the question reduce the present uncertainty or provide information not now readily available?
3. Would the answer to the question yield important information? Have an impact on the course of events?
4. Is this question merely of passing interest to someone, or does it focus on critical dimensions of continued interest?
5. Would the scope or comprehensiveness of the evaluation be seriously limited if this question were dropped?
6. Is it feasible to answer this question, given available financial and human resources, time, methods, and technology? (Fitzpatrick, et al., 2004, pp. 247-248).

### *Methodology: Data Collection Procedures*

#### *Population and Samples*

The population for the study included all teachers. Even though the main target population were only teachers who used 8-grade level system, all teachers other than the teachers who used 8-grade level also included because the evaluator need to know how can this software can be used more widely. Only 4 participants were interviewed. The main information got from survey method using 2-pages questionnaires. There were 120 purposive samples. McBurney (1994) note that "a purposive sample is one that is selected nonrandomly but for some particular reason" (p. 203). Only 116 questionnaires returned, so the response rate was 96.97 percent.

#### *Procedures*

My research methodology used a triangulation mixed methods design because "by combining multiple observers, theories, methods, and data sources, researchers can hope to overcome the intrinsic bias that comes from single-methods, single-observer, and single-theory studies" (Denzin, 1989 cited in Patton, 2001, p. 555). I also compared both of the qualitative and quantitative data sources for similar results and themes. The Auto8Grade grading software is fully described in Appendix A. The research procedures are described herein.

#### *Quantitative*

My quantitative procedure included a pencil and paper survey. The survey for user satisfaction was administered in November 2004. The collected-data questionnaires were returned about January 2005. The research assistants (students in Business Statistics class) helped the evaluator in collecting the questionnaires. Before distributing the questionnaires, the evaluator held a meeting with the research assistants to make sure that

all assistants understand in the same concept about all question items, so they can answer any questions that the samples ask. Teachers who were my samples were informed of the purpose of conducting the survey and their participant rights. There were 116 participants agreed to participate and were given a survey, which included an informed consent document. The survey included questions about their satisfaction in Auto8Grade grading software. There were six characteristics asked about that software, which were ease-of-use, comfortable-to-use, flexibility, can be trace back, providing descriptive statistics and providing graph.

### *Qualitative*

My qualitative research methods included:

#### *The informal conversational interview.*

There are three alternatives for interviewing which are (1) the informal conversational interview (2) the general interview guide approach, and (3) the standardized open-ended interview (Patton, 2001). I used the informal conversation interview because of its strength. "The strength of the informal conversational method resides in the opportunities it offers for flexibility, spontaneity, and responsiveness to individual differences and situational changes" (Patton, 2001, p. 343). There were four teachers as participants. The questions used in the interview covered the same areas as the survey, but were open-ended in order to gather more information from the participants. The interview for each participant took approximately 15 minutes.

#### *Existing documents:*

There were three kinds of existing document that the evaluator must investigate to make sure that Auto8Grade is accurate grading software.

(1) Books that describe how to transform raw score to standard T score, and grading system.

(2) Books that teach how to develop application software.

(3) Books that teach how to develop application software using Excel Visual Basic for Application.

### *Data Analysis*

All participants' interviews were recorded later after interview and their responses were analyzed. The survey responses were investigated and analyzed. All of the data was interpreted. Tabulation of results can be found in the Findings section and their interpretation in Conclusion section of this report.

### *Reporting of Data*

This is a formal written evaluation of the Auto8Grade grading software. The client may chose to present the written findings to teachers who interested in using Auto8Grade grading software, which will make this software be used more widely and the client's organization more well-known.

Table 1. Evaluation of the Auto8Grade grading software

Evaluation Questions	Methodology	Data Collection
Is Auto8Grade accurate grading software?	Archival – Qualitative	Evaluators investigated existing documents and analyzed findings.
Is Auto8Grade Grading Software has essential characteristics that teachers want?	Survey – Quantitative Interview – Qualitative	Survey and interview were administered to teachers. The evaluator analyzed findings.
How can Auto8Grade Grading Software be used more widely?	Survey – Quantitative Interview – Qualitative	Survey and interview were administered to teachers. The evaluator analyzed findings.

Table 2. Methods used for evaluation data collection

Method	Overall purpose	Advantages	Challenges
Survey	To obtain measurable data within time constraint.	Easily obtained large amounts of data.  Very inexpensive  Less time consuming and easy to analyze	Systematic (nonsampling error), which is error resulting from some imperfect aspect of the research design that causes response error or from a mistake in the execution of the research; error that comes from such sources as sample bias, mistakes in recording responses, and nonresponses from persons not contacted or refusing to participate.
Interview	To gather qualitative information that cannot directly observe.	Allowed evaluators to gather additional information that could not be captured in the survey. Allows interaction amongst the participants.	Interviewer error, which is administrative error caused by failure of an interviewer to perform tasks correctly.
Archival	To constitute part of the repertoire of field research and evaluation	Documents prove valuable not only because of what can be learned directly from them but also as stimulus for paths of inquiry that can be pursued only through direct observation and interviewing.	Learning to use, study, and understand documents and files is part of the repertoire of skills needed for qualitative inquiry.

(Table adapted from Kelsey, 2005, Patton, 2001 and Zikmund, 2000)

Section III • Evaluation Findings and Resources

Findings

Quantitative Findings

This section contains the aggregate data obtained with the paper and pencil survey instrument. Written summaries of the data follow each of the tables.

Table 3: Teacher demographics

N=116

Questions	Frequency (f)	Percentage (%)
<b>1. Gender:</b>		
Male	48	41.38
Female	68	58.62
<b>Total</b>	<b>116</b>	<b>100.00</b>
<b>2. Age:</b>		
21-25	9	7.76
26-30	19	16.38
31-35	13	11.21
36-40	9	7.76
41-45	26	22.41
46-50	25	21.55
51-55	10	8.62
56-60	5	4.31
<b>Total</b>	<b>116</b>	<b>100.00</b>
<b>3. Education:</b>		
Below Bachelor	1	0.86
Bachelor	84	72.41
Master	29	25.00
Doctorate	2	1.72
<b>Total</b>	<b>116</b>	<b>100.00</b>
<b>4. Major:</b>		
Business Administration	24	20.69
Education and Educational Administration	34	29.31
Engineering, Science and Technology	33	28.45
Languages	14	12.07
Public Administration	3	2.59
Sociology	8	6.90
<b>Total</b>	<b>116</b>	<b>100.00</b>
<b>5. Public or private institute:</b>		
Public	96	82.76
Private	20	17.24
<b>Total</b>	<b>116</b>	<b>100.00</b>
<b>6. Level of education that your institute provided:</b>		
Kindergarten	19	9.69
Grade 1-6	63	32.14
Grade 7-9	37	18.88
Grade 10-12	41	20.92
Vocational education	11	5.61
University	23	11.73
Other (Work in office 1, Education evaluator 1) (Can reply more than one answer)***	2	1.02

The evaluator administered the survey questionnaire for user satisfaction in the Auto8Grade grading software in November 2004. The collected-data questionnaires were returned about January 2005. There were a total 116 participants who responded to the survey. From the survey findings, there were a little bit male less than female (41.38% and 58.62% respectively). Most participants are senior (about 44% were 41 to 50 years old). Moreover, most of them got bachelor and master degree (72.41% and 25% respectively). They were majoring in different fields such as Education and Educational Administration, Engineering, Science and Technology, and Business Administration (29.31%, 28.45%, and 20.69% respectively). The majority of them (82.76%) worked in public educational institute. Moreover, most of them worked in the institutes that provide teaching in grade 1-6, grade 10-12, and grade 7-9 (32.14%, 20.92%, and 18.88% respectively).

Table 4: User satisfaction after using Auto8Grade grading software

	Degree of Satisfaction					
	Very unsatisfactory	Unsatisfactory but usable	Not very satisfactory	Satisfactory	Quite satisfactory	Total f (%)
Ease-of-use. Provide students' grade in just one click.	-	1 (0.86%)	6 (5.17%)	70 (60.34%)	39 (33.62%)	116 (100%)
Comfortable-to-use. Provide students' grade that can be used immediately.	-	3 (2.59%)	17 (14.66%)	61 (52.59%)	35 (30.17%)	116 (100%)
Flexibility. Teachers can adjust grade boundaries easily.	1 (0.86%)	4 (3.45%)	25 (21.55%)	61 (52.59%)	25 (21.55%)	116 (100%)
Everyone can trace back. Show detail about transforming raw scores to be standard scores.	-	2 (1.72%)	21 (18.10%)	58 (50.00%)	35 (30.17%)	116 (100%)
Provide descriptive statistics.	-	2 (1.72%)	15 (12.93%)	63 (54.31%)	36 (31.03%)	116 (100%)
Provide graph that shows score distribution.	-	4 (3.45%)	16 (13.79%)	56 (48.28%)	40 (34.48%)	116 (100%)

The finding shows that a majority of them (60.34%, 54.31%, 52.59%, 52.59%, 50.00%, and 48.28%) satisfy all characteristics of Auto8Grade (ease-of-use, provide

statistics, comfortable, flexibility, trace back, and provide graph respectively). There was a considerable remark that one participant was very unsatisfied in flexibility. It can be used as a request that the developer may improve the software to be more flexible. However, the crucial characteristic of this software that users satisfy still be ease-of-use, the same result as appeared in the need assessment before the software development.

Table 5: Descriptive Statistics

	Descriptive Statistics					
	N	Minimum	Maximum	Mean	Standard Deviation	Meaning
Number of years he/she taught	116	1	37	16.18	10.20	more experience in teaching
Ease-of-use. Provide students' grade in just one click.	116	2	5	4.26	0.60	satisfactory
Comfortable-to-use. Provide students' grade that can be used immediately.	116	2	5	4.10	0.74	satisfactory
Flexibility. Teachers can adjust grade boundaries easily.	116	1	5	3.91	0.80	satisfactory
Everyone can trace back. Show detail about transforming raw scores to be standard scores.	116	2	5	4.09	0.74	satisfactory
Provide descriptive statistics.	116	2	5	4.15	0.70	satisfactory
Provide graph that shows score distribution.	116	2	5	4.14	0.78	satisfactory

The teaching experience of participants ranges from 1 to 37 years, with average of 16.18 years and standard deviation 10.20. The participants satisfy in ease-of-use, provide statistics, provide graph, comfortable, can trace back and flexibility with average of 4.26, 4.15, 4.14, 4.10, 4.09, and 3.91 respectively.



The significant thing that should not be overlooked is goodness of measures. Sekaran(2003) stated that “it is important to make sure that the instrument that we develop to measure a particular concept is indeed accurately measuring the variable, and that in fact, we are actually measuring the concept that we set out to measure” (p. 202). It is also stated in Wiersma & Jurs(1990) that “validity is the extent to which a test measures what it is intended to measure” (p. 183) and “reliability of measurement is consistency – consistency in measuring whatever the instrument is measuring” (p. 155).

From the above items, Cronbach’s alpha is 0.842, so it is reliable. “A test is reliable to the same degree that it can be depended on to yield consistent, noncontradictory results” (Cangelosi, 1990, p. 29). The concept of this user satisfaction survey to find the result that Auto8Grade grading software is an ease-of-use software that teachers need as said in the need assessment or not. The content validity of this measure can be accepted easily. “Content validity ensures that the measure includes an adequate and representative set of items that tap the concept” (Sekaran, 2003, p. 206).

Following is the findings extracted from open-ended question about their benefit using Auto8Grade grading software. The same meaning contents are already grouped together.

1. Comfortable and fast.
2. Comfortable with large class, and fast.
3. Comfortable and more precision in calculation.
4. Decrease time in grading.
5. Comfortable, decrease error, and have recorded data to be used well.
6. Comfortable, and can be trace back.
7. Comfortable, and help me submitted grade on time.
8. It is ease-of-use, and modern.
9. Fast, accurate, and more precision.
10. Help teachers in grading more easily.
11. Decrease time in grading.
12. Can keep data in secret.
13. It is ease-of-use, can be understood easily not complicated.
14. Can adjust data in a short time.
15. Can be used in internal quality control.
16. Can adjust criteria, comfortable and fast.
17. I gain benefit in evaluation and assessment, scoring, and grading.
18. Comfortable, and there is standard in using it.
19. Help in scoring students’ test.
20. It’s a good program for teachers.
21. I used it to calculate descriptive statistics, and used it in final examination.
22. I used it in teaching improvement; I can know strength and weak point of my students.
23. Use the same standard in grading.
24. It is ease-of-use; users need not to be experts in computer programming.

25. It is very useful.
26. Comfortable, and high efficient.
27. It provide graph for comparing.
28. A little bit complicate.
29. It shows accurate descriptive statistics, ease-of-use, and appropriate to be used.
30. Ease-of use, and more accurate than I calculate it myself.
31. Comfortable, and easy for analyzing.

Following is the findings extracted from open-ended question about any other comments or suggestions about Auto8Grade grading software. The same meaning comments are already grouped together.

1. It should be used for large class students.
2. It will be better if the developer use numeric grade (1, 2, 3...) instead of alpha grade (A, B, C...).
3. It should be grade 1-4.
4. I need more descriptive statistics.
5. It should be instant to be submitted to the register unit immediately.
6. I would like to applause for the idea that teacher can adjust criteria for grading.
7. It's flexible and allows teachers to use their judgment.
8. The developer should distribute this software to all schools.
9. The developer should develop more new computer program.
10. I would like to encourage the developer to do good thing for social and country development.
11. It should be developed to be used with old version of Microsoft Office such as Office 97.
12. Should allow grading from raw score, because we use criterion-reference in secondary school.
13. Should be more good- looking. Should tell more detail in using the software.
14. Should have wizard for beginner.
15. Complicate method.
16. Should provide grade for elementary or secondary school that is 0, 1, 2, 3, 4.
17. Should train all teachers in schools.
18. Should have description in diskette.
19. Should have more detail.
20. Should release this program to all institutes.

### *Qualitative Findings*

The findings analyzed from interview and existing documents are presented below. The findings were analyzed by each of the three evaluation questions, to ensure each of the evaluation objectives has been addressed.

#### *Evaluation Question 1: Is Auto8Grade accurate grading software?*

There were 4 participants in interview. One was male and three were female. From interview, only 1 of 4 said that she would compare with the old software she used that Auto8Grade give the same result from the old one. The other three interviewers did

not interested in trace back the formula for transforming raw scores to be standard scores and the final grades, however they liked that software and they would use this software to help them in grading students' achievement in the future.

From existing documents, there were contents that correspond with the formula used in Auto8Grade grading software. The following is the explanation about z-score.

The simplest of the standard scores, and the one on which others are based, is the z-score. This score expresses test performance simply and directly as the number of standard deviation units a raw score is above or below the mean (Gronlund & Linn, 1990, p. 352).

Another well-known standard score is T-score.

The term T-score was originally given to a type of normalized score based on a group of unselected twelve-year-old children. However, it has come to refer to any set of normally distributed standard scores that has a mean of 50 and a standard deviation of 10. T-scores (linear conversion) can be obtained by multiplying the z-score by 10 and adding the product to 50. Thus,  $T \text{ score} = 50 + 10 (z)$ . This formula will provide T-scores only when the original distribution of raw scores is normal because with this type of conversion (linear), the distribution of standard scores retains the same shape as the original raw score distribution (Gronlund & Linn, 1990, p. 352).

The standard score used in Auto8Grade is normalized T-score.

Normalized T-scores are calculated by (1) converting the distribution of raw scores into percentile ranks, (2) looking up the z-score each percentile rank would have in a normal distribution and assigning these z-scores to the corresponding raw scores, and (3) converting the z-scores to T-scores, using the formula presented earlier. The procedure of going from raw score to percentile to the corresponding z-score in a normal distribution is called an area conversion and yields normalized z-scores that are then transformed directly into normalized T-scores. This results in a normally distributed set of standard scores, regardless of the shape of the original distribution of raw scores. Normalizing is used by test publishers to remove minor irregularities in the raw score distributions (Gronlund & Linn, 1990, p. 354).

*Evaluation Question 2: Is Auto8Grade Grading Software has essential characteristics that teachers want?*

All participants in interview preferred using Auto8Grade. They satisfied in ease-of use that Auto8Grade provided students' grade in just one click (even though they must enter short password "psu" telling on the popup window. The developer received fund from the Department of Business Administration and distributed this software with no charge, so they accepted that it should be appropriate to show something to tell the source

of money for this software development). Their other favorite characteristics were software capability in providing descriptive statistics and graph of score distribution. They did not interest in adjusting grade boundaries which will provide new grades immediately.

Even though all participants said that Auto8Grade can be used easily, one of them said that for her subject, she still wanted to use raw score. She preferred criterion-referenced than norm-referenced measurement. Her opinion was concurred with some suggestions extracted from the survey, which said that they still use raw score and criterion-referenced measurement.

*Evaluation Question 3: How Auto8Grade Grading Software can be used more widely?*

From open-ended questions and from interview, the evaluator recommends the following:

- If ease-of-use grading software for 8-grade level system still be a most important characteristic, the first strategy to promote this software is distributing it to other institutes.
- The developer may improve the software until it can tell both letter and numeric grade. Moreover, it can be used for any grade level other than only 8-grade level. However, it will be an attempt to generalize this software, and there will be many dialog boxes in each step to ask users to enter their preferences which will make it more complicate to use.

### *Evaluative Judgments, Conclusions and Recommendations*

#### *Evaluative Judgments and Conclusions for Objective 1*

Is Auto8Grade accurate grading software?

At the present time, and according to my research, I conclude Auto8Grade is accurate grading software. The evaluation findings documented that Auto8Grade created the same grade result of the software some teachers used in the past, and it showed detail of calculation that teachers can trace back to make sure that it uses the correct formula and grading procedure.

#### *Recommendations for Auto8Grade grading software evaluation objective 1.*

Teachers who use 8-grade level system and teach in large class should try to use Auto8Grade as a tool for grading. Teachers who want to grade students in less than 8 levels still can use this software with a little bit adjustment. Teachers who preferred criterion-referenced than norm-referenced measurement still can use Auto8Grade to keep eyes on students' learning by looking at their descriptive statistics and graph.

*Evaluative Judgments and Conclusions for Objective 2*

Is Auto8Grade Grading Software has essential characteristics that teachers want?

The evaluation process revealed that Auto8Grade has essential characteristics that teachers want. The following characteristics are sorted from the most characteristic teachers want to the least one:

- Ease-of-use.
- Provide statistics.
- Provide graph.
- Comfortable.
- Can trace back
- Flexibility.

*Recommendations for Auto8Grade grading software evaluation objective 2.*

If the developer uses ease-of-use as the most crucial characteristic of grading software, no changes need for this software. However, to serve the teachers' need in numeric grade in stead of letter grade, the developer should develop another version that reports the numeric grade.

*Evaluative Judgments and Conclusions for Objective 3.*

How Auto8Grade Grading Software can be used more widely?

The majority of the participants prefer ease-of-use characteristic of Auto8Grade grading software. The developer should distribute this software to other institutions to make it well-known software for grading.

*Recommendations for Auto8Grade grading software evaluation objective 3.*

I recommend the following:

- The developer should create many new versions as derivatives of Auto8Grade grading software and distribute them to other institutes with free of charge.
- The Department of Business Administration, Faculty of Management Sciences, Prince of Songkla University, as a client, should promote this software through many kinds of channel, such as on the web site of the faculty, or by setting some seminars for PR (public relation) this software.

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*Final Report-Evaluation of Auto8Grade Grading Software*

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*Management Plan*

*Timeline*

<b>Date</b>	<b>Activity</b>
Sep 2003	Evaluation Logic Model is due.
Oct-Dec 2003	Need assessment
Jan-Nov 2004	Developed "Auto8Grade" grading software
Nov 2004	"Auto8Grade" software released accompanying with user satisfaction questionnaires.
Jan 2005	User satisfaction questionnaires returned.
Feb 2005	Conduct interviews
Aug 2008	Final written evaluation due.

*Budget*

<b>Budget items</b>	<b>Value</b>
Time @ \$17 per hour, eight hours a week per evaluator for 18 weeks	\$2,448.00
Photocopying of all evaluation materials	\$62.00
Necessary office supplies	\$60.00
<b>Budget Total</b>	<b>\$2,570.00</b>

Section IV • Evaluation Standards

*Standards: Utility, Feasibility, Propriety, and Accuracy*

Below I have included the Evaluation Standards according to The Joint Committee on Standards for Educational Evaluation and Sanders (2 ed., 1994).

U - Utility Standards. The utility standards are intended to ensure that an evaluation will serve the information needs of intended users.

F - Feasibility Standards. The feasibility standards are intended to ensure that an evaluation will be realistic, prudent, diplomatic, and frugal.

P - Propriety Standards. The propriety standards are intended to ensure that an evaluation will be conducted legally, ethically, and with due regard for the welfare of those involved in the evaluation, as well as those affected by its results.

A - Accuracy Standards. The accuracy standards are intended to ensure that an evaluation will reveal and convey technically adequate information about the features that determine the merit or worth of the program being evaluated.

*Evaluation of Auto8Grade grading software Final Evaluation Report Standards*

*Utility*

The utility standards are intended to ensure that an evaluation will serve the information needs of Auto8Grade grading software users

*U1 Stakeholder Identification*

The stakeholders were clearly identified throughout the evaluation process. This included the evaluation proposal, the logic model, and the final evaluation report.

*U2 Evaluator Credibility*

The persons conducting the evaluation should be both trustworthy and competent to perform the evaluation. The Auto8Grade grading software evaluator teaches in Business Statistics and Computer Application in Business for many years, so researching the archival data about grading system and how to follow each step and trace back the formula can be done with maximum credibility and acceptance.

*U3 Information Scope and Selection*

In an effort to collect a broad array of information for the evaluation and to address the clients' needs, I selected three methods for data collection: a quantitative survey, a qualitative interview, and archival method.



*Final Report-Evaluation of Auto8Grade Grading Software*

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*U4 Values Identification*

In each of the finding sections, I provided a brief summary of the perspectives, procedures, and rationale used to interpret the findings, in effort to provide clarity for my value judgments.

*U5 Report Clarity*

In the introduction section of the evaluation, I have provided a comprehensive background of the program and the client's position; this was done to create a sense of relevance and understanding for the evaluation.

*U6 Report Timeliness and Dissemination*

The final report was delivered to the client right on schedule, according to the timeline, which was signed by both the client and the evaluator. The client will receive a written report and a PowerPoint presentation of the evaluation procedure. The client may then choose to further disseminate the findings of the evaluation at her own discretion.

*U7 Evaluation Impact*

Evaluation was planned, conducted, and reported in ways that encourage follow-through by stakeholders. The findings and recommendations section of the evaluation includes information that the client may act upon or implement to improve the program.

*Feasibility*

The feasibility standards were incorporated into the evaluation process in order to conduct realistic, prudent, diplomatic, and frugal evaluation.

*F1 Practical Procedures*

The evaluation procedures were practical to keep disruption to a minimum while needed information is obtained. The evaluator developed alternative procedures in anticipation of potential problems and retain sufficient flexibility in the plan and budget so that unanticipated problems can be addressed as they occur.

*F2 Political Viability*

Before starting the evaluation process, the evaluator submitted an evaluation proposal that was reviewed and signed by the client and thus became a contract between the evaluator and the client. The contract explicitly stated the evaluation focus and questions, evaluation methodology, delimitations of the evaluation, client deliverables, and communication between client and evaluator. Throughout the evaluation process the client was informed about the progress of the evaluation.

*F3 Cost effectiveness*

I researched the costs of materials and services I intended to use during the evaluation process. Then I developed a budget in which all costs, including dollar amounts, time, and in-kind support are listed and explained. I conducted the evaluation as economically as possible.

*Propriety*

The propriety standards are intended to ensure that an evaluation will be conducted legally, ethically, and with due regard for the welfare of those involved in the evaluation, as well as those affected by its results.

*P1 Service Orientation*

The Auto8Grade grading software was started with a meeting with the client; because evaluator needed to know the context of the Auto8Grade grading software. The client also needed to design the program to meet the client needs and lay out the plan of the program. In addition, evaluator informed the stakeholders the purposes of the evaluation. Moreover, the evaluator provided interim evaluation findings citing strengths and deficiencies and suggestions for improvement.

*P2 Formal Agreements*

After the first meeting with the client, evaluator drafted the agreement and sent it to the client to consider and approve it. This formal agreement was the guideline of the evaluation. Both evaluator and client held on to this agreement.

*P3 Rights of Human Subjects*

The evaluator developed formal written agreements that explain the procedures to be followed by the client and the evaluator to ensure that the rights of participants will be protected.

*P4 Human Interactions*

Evaluator communicate with the client and participants through their accepted channels such as e-mail, telephone, formal and informal meeting. I was careful about the way to communicate with the stakeholders since I do not want to make them uncomfortable.

*P5 Complete and Fair Assessment*

The evaluator fully reported findings that indicate both strengths and weaknesses, whether intended or unintended, and justify each.

*P6 Disclosure of Findings*

The evaluator reported the finding completely in writing and orally with full disclosure of pertinent findings and without omissions or other alterations.

*P7 Conflict of Interest*

The evaluator identified and clearly described possible sources of conflict of interest in initial discussions with clients

*P8 Fiscal Responsibility*

The evaluator specified major costs for the evaluation in agreements with the client, including personnel, consultants, travel, supplies, postage, telephone, data processing, conferences and meetings, public information, printing, metaevaluation, and overhead.

### *Accuracy*

The accuracy standards are intended to ensure that an evaluation will reveal and convey technically adequate information about the features that determine worth or merit of the program being evaluated.

#### *A1 Program Documentation*

All evaluation documents are clearly and accurately described and documented since the baseline until the end of the program. Program documents include proposal, logic model, instrument development (survey and interview questions), research model, data collection via questionnaire and archival data), final report, and PowerPoint presentation.

#### *A2 Context Analysis*

The context in which the Auto8Grade grading software program exists was examined in enough detail, so that its likely influences on the program can be identified.

#### *A3 Described Purposes and Procedures*

The purposes and procedures of the evaluation were monitored and described in enough detail, so that they can be identified and assessed.

#### *A4 Defensible Information Sources*

The sources of information used in the evaluation were described very well. All of the sources of information and knowledge are cited in the reference section.

#### *A5 Valid Information*

The information gathering procedures was chosen and implemented so that they will assure that the interpretation arrived at is valid for the intended use.

#### *A6 Reliable Information*

The information gathering procedures was chosen and implemented so that they will assure that the information obtained is sufficiently reliable for the intended use.

#### *A7 Systematic Information*

Evaluator, client, and professor systematically reviewed the information and finding collected, processed, and reported in the evaluation. Any errors found were always corrected.

#### *A8 Analysis of Quantitative Information*

Quantitative data from our finding was appropriately and systematically analyzed into frequencies, percentages and means so that evaluation questions are effectively answered from the findings.

#### *A9 Analysis of Qualitative Information*

Evaluator appropriately and systematically analyzed qualitative data from the finding so that evaluation questions are effectively answered.

*A10 Justified Conclusions*

The conclusions were explicitly justified as presented in the report, so that the stakeholders can assess them.

*A11 Impartial Reporting*

In order to prevent personal feelings and biases of any party to the evaluation, evaluator worked and determined the judgment based on the actual finding and purpose of conducting this evaluation.

*A12 Metaevaluation*

The evaluation itself should be formatively and summatively evaluated but my client did not allow evaluator conducting the formative evaluation, only summative evaluation of which the client requested I complete.

## **Appendices**

## **Appendix A**

### **Auto8Grade Grading Software Interview Questions**

- What were you hoping to get from using this software?
- How do you evaluate the Auto8Grade grading software in terms of
  - Ease-of-use; provide students' grade in just one click.
  - Comfortable-to-use; provide students' grade that can be used immediately.
  - Flexibility; teachers can adjust grade boundaries easily.
  - Ability that everyone can trace back; show detail about transforming raw scores to be standard scores.
  - Ability that provide descriptive statistics.
  - Ability that provide graph that shows score distribution.
- What are your suggestions for improving the Auto8Grade grading software?
- Did the Auto8Grade grading software meet your requirement for preferable grading software? Why or why not?
- What is your opinion about your benefit using Auto8Grade grading software?
- What are your comments or suggestions about Auto8Grade grading software?

## Appendix B

Department of Business Administration  
Faculty of Management Sciences  
Prince of Songkla University  
Hatyai, Songkhla, 90112

November, 2004

Dear Participant,

This questionnaire is designed to study user satisfaction of Auto8Grade grading software. The information you provide will help us better understand about crucial characteristics of grading software teachers want. Because you are the one who can give us a correct picture of how you experience your grading system and Auto8Grade grading software, I request you to respond to the questions frankly and honestly.

Your response will be kept strictly confidential. Only members of the research team will have access to the information you give. In order to ensure the utmost privacy, we have provided an identification number for each participant. This number will be used by us only for follow-up procedures. The numbers, names, or the completed questionnaires will not be made available to anyone other than the research team. A summary of the results will be mailed to you after the data analyzed.

Thank you very much for your time and cooperation. I greatly appreciate your help in furthering this research endeavor.

Cordially,  
Aree Limwudhikrajirath.  
The researcher

**Auto8Grade Grading Software User Satisfaction Survey**

Questionnaire number.....

**1. User Satisfaction:**

Consider each of the following items after using Auto8Grade grading software.  
Please indicate how you satisfy on the following characteristics of Auto8Grade by marking one box in each item.

<b>Degree of Satisfaction</b>	<b>Very unsatisfactory</b>	<b>Unsatisfactory but usable</b>	<b>Not very satisfactory</b>	<b>Satisfactory</b>	<b>Quite satisfactory</b>
Ease-of-use. Provide students' grade in just one click.					
Comfortable-to-use. Provide students' grade that can be used immediately.					
Flexibility. Teachers can adjust grade boundaries easily.					
Everyone can trace back. Show detail about transforming raw scores to be standard scores.					
Provide descriptive statistics.					
Provide graph that shows score distribution.					



**2. User benefit:**

Please give some opinion about your benefit using Auto8Grade grading software.

- 2.1.....
- 2.2.....
- 2.3.....

**3. Other comment or suggestion:**

Please give any other comments or suggestions about Auto8Grade grading software.

- 3.1.....
- 3.2.....
- 3.3.....

**4. Participant Information**

- 1. Gender       Male               Female
- 2. Age (year)     less than 21     21-25               26-30  
                     31-35               36-40               41-45  
                     46-50               51-55               56-60
- 3. How many years did you work in teaching career? .....
- 4. What is your highest education?  Lower than bachelor degree       bachelor degree  
    master degree                               doctorate degree
- 5. What is the major of your highest education? .....
- 6. What is the name of your institute (school or college or university) you are working in?  
.....
- 7. You are working in a public or private institute?     Public               Private
- 8. What is the level of education that your institute provides for the students? (you can reply more than one answer ).  
 Kindergarten               Grade 1-6               Grade 7-9  
 Grade 10-12               Vocational education       University  
 Other (Please specify.....)

\*\*\* Thank you very much for your time and cooperation\*\*\*\*\* MGT-PSU\*\*\*

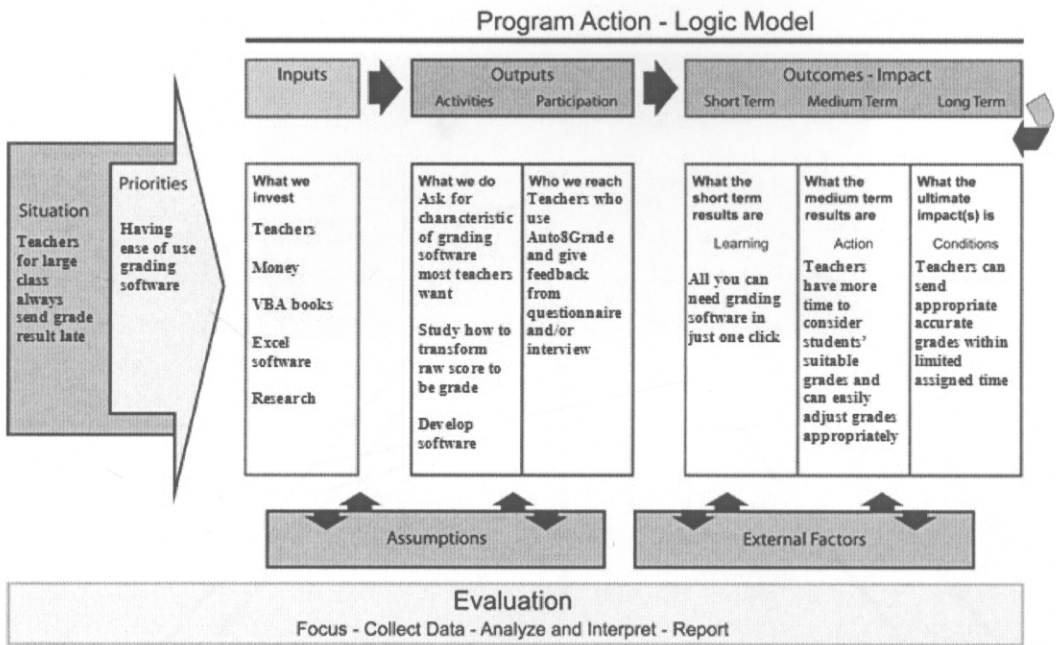
Appendix C

Logic Model for Auto8Grade grading software

The Logic Model

“AUTO8GRADE” GRADING SOFTWARE EVALUATION

Click-and-Go Auto8Grade

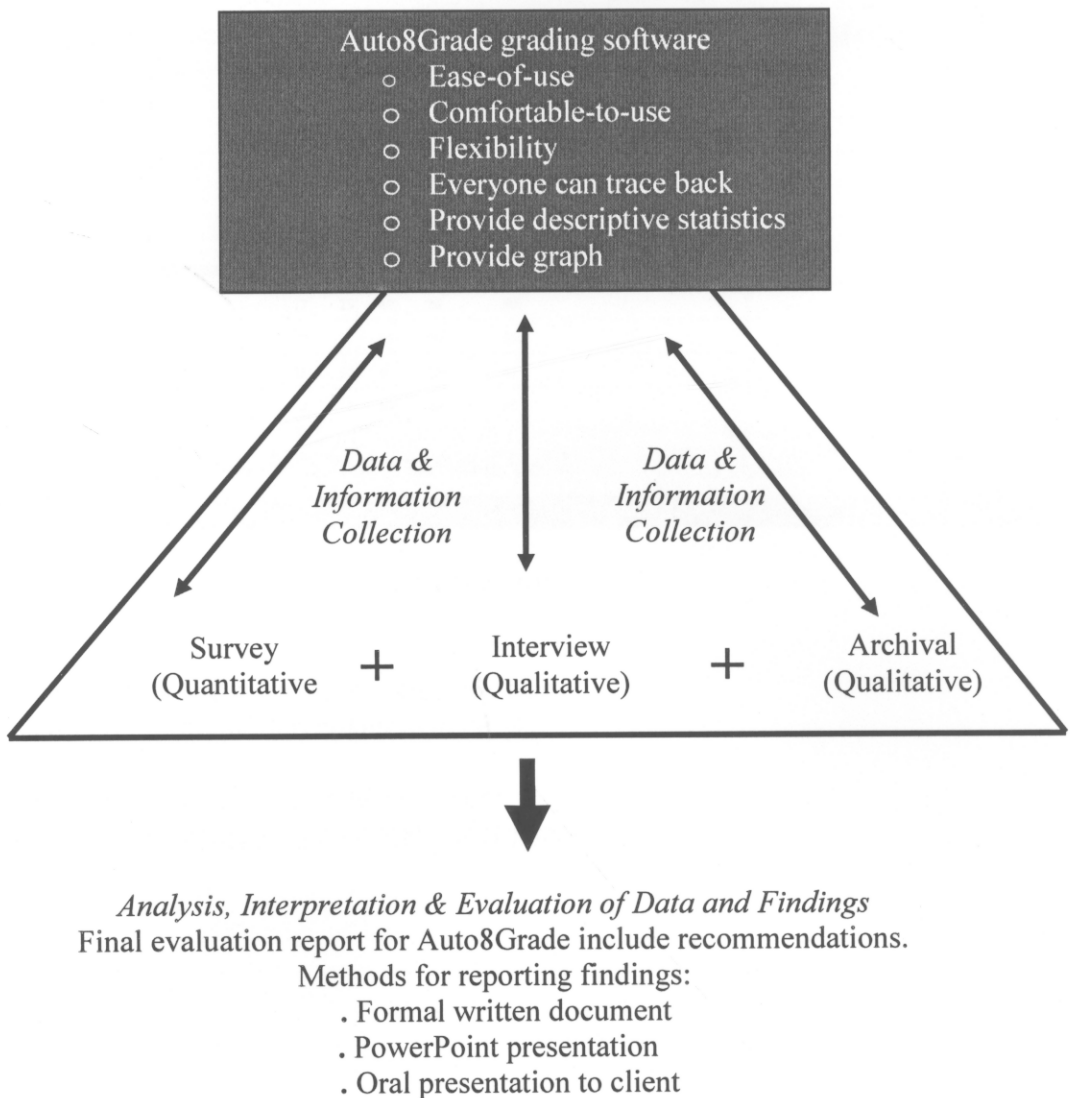


## Appendix D

### Evaluation Model of Research Methods

#### Evaluation Research Design Model for Auto8Grade grading software

I have chosen a triangulation mixed methods research design for my client, Sasiwimon Sukabot, head of the Department of Business Administration, the Faculty of Management Sciences, Prince of Songkla University. The evaluation will be best served by using both quantitative and qualitative research methods via questionnaire, interview, and archival data.



## Appendix E

### Picture of Evaluation Process

The screenshot shows the Microsoft Excel - Auto8Grade application window. The title bar reads "โปรแกรมคำนวณ T Score และคิดระดับคะแนน พัฒนาโดย อารีย์ สีมูณีไกรจิรัฐ ภาควิชาบริหารธุรกิจ คณะวิทยาการจัดการ มหาวิทยาลัยการจัดการ ม.สงขลานครินทร์". The spreadsheet contains the following text and data:

1 โปรแกรมคำนวณ T Score และคิดระดับคะแนน พัฒนาโดย อารีย์ สีมูณีไกรจิรัฐ ภาควิชาบริหารธุรกิจ คณะวิทยาการจัดการ ม.สงขลานครินทร์

2 วิธีการใช้งาน เพียงแค่เติมข้อมูล เกี่ยวกับวิชาที่จะคิดระดับคะแนนลงไปในช่วงต่างๆ คล้ายตัวอย่างนี้ แล้วคลิกปุ่ม Auto 8 Grade

3 จะสร้างกราฟให้ใน sheet ชื่อ data คำนวณ T Score ให้ใน sheet ชื่อ file คำนวณแล้วแจ้งเกรดให้ใน sheet ชื่อ 8grade

4 รายละเอียดในการหาคะแนนดิบรวม (total100) อาจจะมีมากกว่าหรือน้อยกว่าตามตัวอย่างนี้ก็ได้แต่รายละเอียดทั้งหมดจะอยู่ในคอมเมนต์

5 ที่อยู่ติดกันเริ่มตั้งแต่คอลัมน์ A คล้ายตัวอย่างนี้ และคะแนนดิบของแต่ละคนต้องเป็นเลขจำนวนเต็มและในแถวที่ 10 ต้องวางไว้ทั้งแถว และ ต้องใช้ Microsoft Excel 2000 ขึ้นไป

6 Subject 460-191 Intro to Computer Programming

7 Semester ภาคการศึกษา 1/2547

8 credit :3 (2-2-0)

9 section รหัส: 01

10 Auto 8 Grade คลิกที่นี่

sec	ID	Name	mid40	fin40	sum8(wk20)	total100	
1	4312345	น.ส.สมมุติ สุกุลเสด็จ	3	15	18	20	38
1	4312346	assume2	17	23	40	20	60
1	4312347	assume3	12	23	35	20	55
1	4312348	assume4	21	20	41	20	61
1	4312349	assume5	8	7	15	20	35

### Start page sample

Note.

Auto8Grade grading software can be retrieved from <http://vclass.mgt.psu.ac.th/~laree/Auto8Grade.xls>

The Auto8Grade manual can be retrieved from <http://vclass.mgt.psu.ac.th/~laree/Auto8GradeManual.pdf>