Teaching Model for Competency Improvement of Deaf People on the Industrial Job

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Abstract

Job market of Thailand highly requires more than 110,000 welders each year while only the number of 13,200 graduates in this field could be provided each year. Welder shortage then happens because most teenagers dislike studying in such field.

There is then an urgent need to provide humen resource in this field. The number of disable people in Thailand is about 700 thousands. If they are trained they can be a valuable human resource. Some of deaf people want to take part in this job to feel proud of themselves without worrying about possible danger from such job. They never need any sympathy from others'. They can do such job well for they are always carefully act. However, according to the research, the deaf one must take 3 times longer than normal people for the same content of the study. This study then was conducted as a research and development study. The objective of this study is to create the teaching model to improve the competency of the deaf ready for industrial job .

The results of this study could show that the components of the teaching model are composed of 1) training course of " MAG Fillet Steel welding for the deaf": topic of "welding gun assembling", 2) Instruction media kit with 105 terms of Thai deaf language, and 3) the defined teaching model: "DEAFS Model" could be applied on the trainees and all the trainees would pass the assignment, it could show the result at 100 percent. And 4) the satisfaction evaluation results to the training at high level and it could meet the defined hypothesis.

1. Background

Job market of Thailand highly requires more than 110,000 welders each year, (Labour Market Research Division, 2009) while only 13,200 graduates could be provided. (R Teen, 2010) Welder shortage then happens because most Thai teenagers dislike studying in such field(Thairath, 2011). Actually, it could be found that Thai Government increasingly acknowledges the importance of disables and had issued the new proper law 2 years ago on a better job opportunity for disables. It is to command any industrial organization having workforces over 100 labour to hire disable people at the ratio of 100:1 with provision of actual right of benefits such as tax and others. (The Government Gazette, 2011)

We surveyed and visited the factory having deaf workers and could find that many deaf who never had knowledge of technical job showed their interest to work in industries as the job area of maintenance. They applied the technic of "on the job training method" trained by the technician leader, however, communication with Thai sign language and teaching method became problem during the training. An information survey on the technical courses for the deaf provided by some organization or some school showed that it was only informal learning with easy basic work skill. Moreover, the trainers lacked skill on sign language, they could communicate with mind, However, while some trainers could communicate with sign language, some hard technical terms became problems and they had to specially defined them on their own to make clear understand in their groups. Any practical teaching method, any proper media for the deaf could not be efficiently defined, additionally, it was found that the deaf could easily forget the trained knowledge just only in a short time.(Mongkol and others, 2011)

Presently, there are about 700 thousands of the deaf in Thailand (National Statistical Office, 2007) who need opportunity to have their own jobs with their actual human rights, they never require any apathy to them.(Youngyuth and others, 2010) The deaf have only few experiences, they majorly communicate with Thai sign language. They have harder problems to learn. Furthermore, they had to spend 3 times harder than normal learners for the identical class.

Faculty of Technical Education, King Mongkut's University of Technology, North Bangkok, Thailand, is the faculty having major duty of technical & vocational teacher development. The faculty has been established for about 40 years under the name of Thai-German Technical Teacher College" (TGTTC), there were German teachers practiced research providing with practical industrial practice of MIAP model (M=Motivation, I=information, A=application and P=progress) (Suchart. 2011) suitable for Thai learners. Such model has also long widely applied as a model for vocational education .

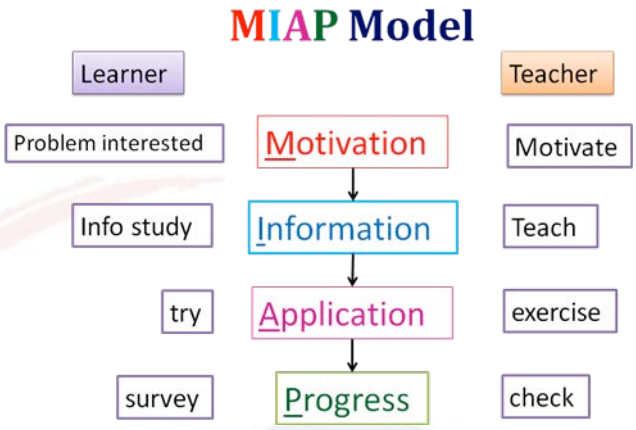

Figure 1 Diagram of MIAP Model

Before teaching, the learners must be motivated and then, Information, will be produced. The Information means the practical contents and knowledge the learners should gain for their problem solving on the process of A or Application, or the defined practice of the learners.The trainers or the teachers then could process the P or Progress to inspect and correct the workpieces of the learners to have the approval for them and to provide some helpful advice on the works, the process of the I may be re-provided for any incomplete job. If any problem disappeared, further practice could be assigned to complete the model of MIAP

Moreover, we have studied other 9 favorite vocational skillful teaching models used in Thailand. (Administrator, 2012) Conclusively, they could be composed of 3 major steps. Firstly, it was preparation step that would be job analysis, and teaching preparation. Secondly, teaching step, it would be started by explanation, advising, finding abilities of learners, and demonstrate to learners before the learners started to practice by selves. Finally, it would be the process of learner evaluation.

We then have the idea to use MIAP teaching model and the other to be the conceptual pattern for creating specific teaching model for the deaf. The research of "Teaching Model for Competency Improvement of Deaf People on the Industrial Job" then should be helpful for the deaf to effectively learn and able to work on industrial work, it also should be the solution to the shortage of industrial technical workers as well.

2. Objective of the Research

To create teaching model for the deaf (to be ready prepared) for industrial jobs

3. Scope of the Research

3.1 The research topic of "welding gun assembling" would be provided according to the course of MAG fillet steel welding for the deaf.

3.2 The sampled people are the deaf finishing grade 9 and could communicate with Thai sign language.

4. Significance of the study

4.1 The organization related to job training for the deaf could apply the designed teaching model on teaching to the deaf to be prepared for the industrial job on Magfillet Steel Welding and to solve the deficiency of welding technicians

4.2 The organization related to job training for the deaf could apply the designed teaching model on teaching to the deaf to be prepared for other industrial job markets

5. Research Methodology

The 4 steps of model development, material design, pilot study and implementation, and the focus group then would be processed.

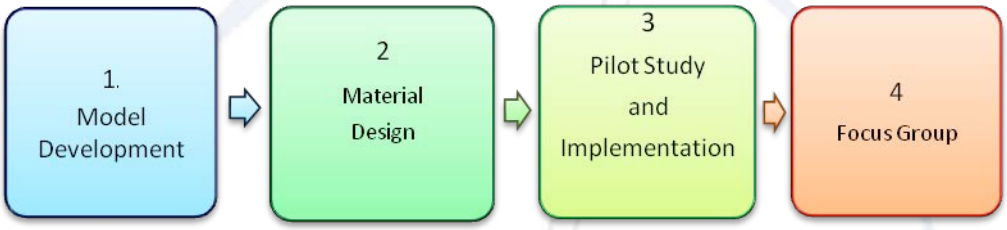

Figure 2 Procedures of research operation

5.1 Model Development

We created the model, the teaching process started with major theory using MIAP model, demonstration of work skill, then the learners would be assigned to start practical work, the process of workpiece inspection would be done, any incomplete workpiece would be repaired, additional teaching would be provided to any deaf of such incomplete work. The teaching model could be shown below.

Figure 3 The teaching model for deaf

5.2 Material Design

We had the brainstorm with the experts who are teachers on welding works and on teaching media. Proper teaching topics and contents including with proper theory and practices would be designed. The proper teaching topic of "the welding gun assembling" then was designed according to the designed course of technical class of the welder of MAG fillet steel for the deaf. Finally, the complementary practical contents for the teaching would be cooperatively done.

Then the designed contents would be cooperatively analysed to create the teaching media according to the defined model. The teaching media;document, PowerPoint and video, would be the one different from that of the actual media for normal learners. The created teaching media would be suitable for the deaf.

Complementary documents for the deaf teaching would be composed of the proper contents similar to that of normal teaching but the description would be brief' and defined fonts would be Angsana UPC of 18 points: **Angsana 18, Angsana16** (normally the font size of 16 should be used), moreover, necessary proper pictures would be presented and their dimensions would be larger than that of normal one, 1.5 times bigger than normal one with completely colorful pages.

The produced video would be composed of the steps of "welding gun assembling" including with Thai subtitle. The subtitle would clearly show with white – yellow fonts of double size bigger than actual one.

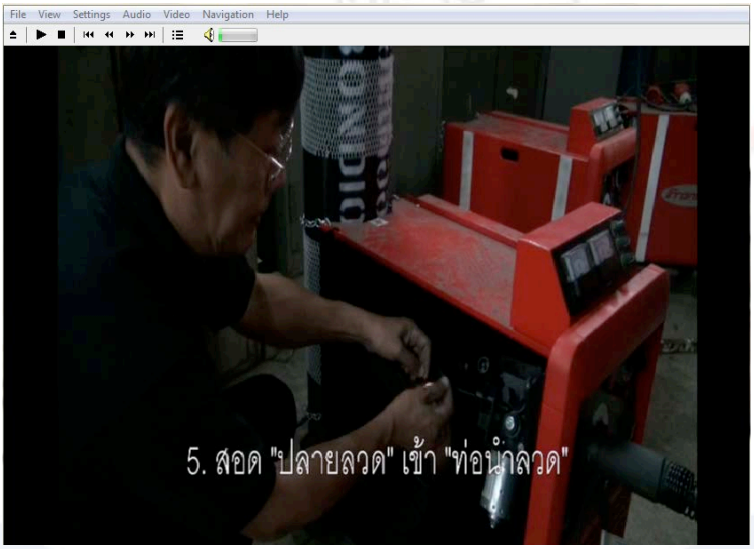

Figure 4 VDO. with Thai subtitle

5.3 Pilot study and Implementation

For the teaching operation, sampled group of 5 learners would meet the defined properties of being deaf, grade 9 certified, able to communicate in Thai sign language,

and require to work as industrial technician, the created model would be applied on the defined group, started from teaching theory by MIAP. The teachers would be normal one having no sign language understand. Proper sign language interpreter without technician knowledge would be additionally applied.

Figure 5 Atmosphere of theory teaching

The second step, the teacher demonstrated the process of "welding gun assembling" to the deaf learners.

The third step, the deaf learners would start practicing by selves.

The last step, the teachers inspected and correctedthe practiced workpieces. It was found that some deaf learners could not show the complete some steps. The teachers would additionally explain such problems before let the learners go on the defined works. After all jobs were completed, the next step would be continued.

Figure 6 Testing of welding gun assembling

Then, the teachers would evaluate the deaf learners by assigning all deaf learners to assemble the welding gun onto the welding machine and the learners could absolutely complete such assigned job. (the defined gain of 100 percent) After that, the deaf learners would respond the training satisfaction evaluation questionnaire according to the defined model. The trainees complete the training satisfaction form. The details of satisfaction results could be shown in Table 1

Table 1: Satisfaction of deaf learners to the training

Item	$\bar{X}$	S.D.	Meaning
1. Content suitable for the objectives	4.29	0.49	high
2. Trainer has practical knowledge	4.43	0.79	high
3. Trainer has ability to train	3.86	0.69	high
4. VDO. being helpful for learning	4.29	0.49	high
5. Document pattern, suitable	4.14	0.69	high
6. Content, suitable	4.71	0.49	The highest
7.Theory teaching period, suitable	4.29	0.49	high
8. Practice period, suitable	4.29	0.49	high
9. Location for training, suitable	4.43	0.53	high
10. Tools are considered to be suitable for	4.57	0.53	The highest
Overall satisfaction	4.33	0.57	high

From Table 1, it could show that the deaf learners showed satisfaction to the training at high level ($\bar{X}$ = 4.33), and when having consideration on individual item it could show the satisfaction on 2 topics; contents of being easy understand, and training tools of satisfaction. ($\bar{X}$ = 4.71, 4.57) The other 8 topics would have the satisfaction at high level.

5.4 Focus Group

We provided the Focus Group of 9 related people who are welding teacher experts, normal one teaching the deaf and the deaf one teaching the deaf. All the 9 cooperatively discussed the practical comments and ideas about the teaching model and the promising teaching results. The cooperative work on teaching method improvement then would be done. The attendants on the meeting had common agreement the designed pattern could make the deaf learners learn better; however, it still had some weak points to be improved, such weak points should be recommended later.

Figure 7 Focus group

6. Result

The results of this study showed that the components of the teaching model could be composed of 1) training course of " MAG Fillet Steel welding for the deaf": topic of “welding gun assembling”, 2) Instruction media kit with 105 terms of Thai deaf language, and 3) the defined teaching model: “DEAFS Model” could be applied on the trainees and all the trainees would pass the assignment, it could show the result at 100 percent. And 4) the satisfaction evaluation results to the training at high level and it could meet the defined hypothesis.

7. Discussion

The teaching with the MIAP model on the Motivation process using comparative PowerPoint presentation could make the deaf learners interested in’ the chapters well, the description of the contents by interpreter could make the deaf learners clearly understand, though the process would use 2 times harder than the actual.

Moreover, because there were no proper technical terms for technician in sign language, new additional creative ones then would be created.

The required theory learning using such the designed pattern could reduce time consuming on the chapters from 3 times to 2 times shorter than that of normal one. It could say that the actual learnerscould actually spend 15 minutes to make clear understand on such chapter while the deaf one would spend 30 minutes instead. It could remark that for some events the help from the trained deaf teachers could make the deaf learners gain clear understanding quicker.

Figure 8 Deaf teacher explained to the practice

Providing of Information using only video with Thai subtitle could not make better understand for the deaf learners because the deaf learners hardly had fluent Thai language understanding, moreover, new vocabularies also had defined for. The necessary ways to make them easily clearly understand should be additional explanation by the trained deaf teacher; the trained deaf teachers could more clearly understand such Thai subtitle.

Teaching by demonstration method; the deaf learners could have actual real practice well with more clear understand and confidence, they could well remember the ever saw and can remember better than that of other media technic.

On the period of practice; the deaf learners could practice well on the designed period close to that of the normal learners; on the device preparation and on the defined assembling.

8. Conclusion

The deaf learners could gain ability to practice skillful job well in the assigned period close to that of the normal learners. However, for the identical theory course, reduction of time spending from 3 to 2 times could be more reduced by using the new adjusted teaching model.

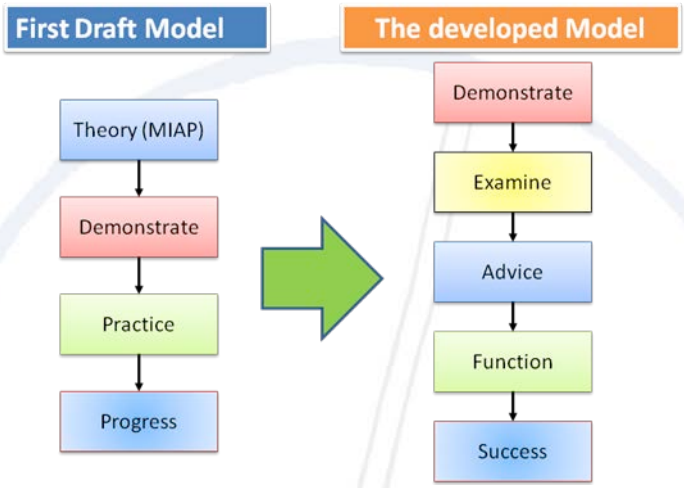

Figure 10 DEAFS Model

The deaf could well study whenever they practice on actual job by them selves, if they have no experience they will hesitate and have less confidence and they have to spend longer time than that of normal people. The practical teaching model should be initially applied on the actual real work and let the learners start practicing by selves before teaching the practical theory to them. Additional practice would be assigned after the theory teaching. Workpiece defect inspection and additional explanation must be done. Such model was called DEAFS Model; D-Demonstrate, E-Examine (try), A-Advice (theory:MIAP), F-Function (practice), and S-Success (progress).

Figure 11 technical vocabularies for the sign language

For the media of learning, 105 additional created technical vocabularies for the sign language were cooperatively defined to be tested and further applied on the teaching media of" the MAG fillet steel welding course for the deaf learners".

Figure 12 the deaf trainees and the trainer

For the communication problem, additional research on "Development of Industrial Technical Teachers for Deaf Workers" should be done. It should be the solution to such problem and could reduce time consuming on the defined course as well.

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