Developing a System to Assess Teachers' Performance via Information Technology According to the Joint Committee on Standards for Educational Evaluation: A Policy Proposal for Thailand

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Abstract: Thailand has developed its teacher-assessment process to determine the skills of individual instructors for the purpose of improving during the semester, as regards rehiring or promotions. For the first time in this country, schools are using videos as a tool for performance assessment. This research focused on evaluating the professional skills of government teachers and other educational personnel. The primary areas of concern are as follows: (1) learning management and student attention; and (2) learning outcomes as a basis for creating and developing performance assessment by using online information technology systems. This is a pilot-based system for examining the feasibility of online teacher-performance assessment leading to the formulation of policy proposals for further development of the actual system from the policy proposal development phase of the assessment process. This research used a mixed method research methodology by adopting an exploratory design. The informants were 22 experts who assessed the videos obtained by purposive selection. The experts who confirmed the policy proposal summary were the same group responsible for assessing the videos by using the joint committee on the standards for educational evaluation. Not less than 80% of the 22 qualified people were selected on a voluntary basis. The information and communication technology system consisted of six steps: (1) recording basic information by requesting a username and password from the central system; (2) teachers applying for assessment submitted their learning-management plan and personal portfolio profile (PPP) to the system; (3) the system administrator received the files; (4) that administrators submitted the files to the qualified experts to assess teachers according to the criteria; (5) the expert assesses the forms recorded in the system according to the list and specified indicator; and (6) the assessment is processed. The assessors gave their opinions on the assessment system in terms of utility, feasibility, propriety, and accuracy so that these can be used to evaluate the performances of teachers.

Keywords: Thai teacher performance, Performance assessment process, Information technology systems

Introduction

The main role of a teacher is to design a learning program which helps students to learn and develop themselves to the greatest extent, which is also necessary for their teaching careers. Assessments are integral to the status, pay, promotions, and future of a teacher. Therefore, they must be objective, fair, and reasonable. In Thailand, teacher assessments are divided into an annual performance assessment and the assessment of academic standing, which are completely separate (Sasiwuttiwat, n.d.). As a result, teachers have a massive burden which can undermine their teaching and the experiences of their students.

The standard assessment model has advantages and aspects that should be improved or eliminated. The pros are as follows: (1) teachers understand the importance of designing and developing learning innovation skills; (2) teachers can make tangible progress in their duties and be inspired; and (3) teachers passing the academic standing assessment are identified as being good at their job. The cons were as follows: (1) there are more teachers with academic standing, but the achievements of the students did not meet the standard; (2) the assessment results did not often reach the students; (3) hiring for academic standing which is not beneficial to teachers; (4) many teachers become too focused on their academic

standing, which detracts from actual care for students; and (5) the standards among "expert" reviewers are not uniform. This causes teachers who submit work on academic standing to lose opportunities. Sasiwuthiwat (n.d.) identified the problems with an academic standing assessment: (1) assessment was not related to standardized testing results; (2) assessment did not reflect the skills of teachers; and (3) ethical assessment is oblique, subjective, and requires a lot of discretion. The results of this kind of assessment are therefore not very reliable (Sasiwuttiwat, n.d.). Research has shown that it is one of the underlying causes of low teaching quality. In many countries, teacher rewards are largely dependent on how long a person has been at a school and their educational background. However, these factors are not indicative of teaching skills or student achievements. As a result, many Thai teachers are not motivated to improve or pay adequate attention to their students. At the same time, talented teachers are discouraged (Odden, 2008; OECD, 2009, cited in Sasiwutthiwat, n.d.).

The Office of Government Teachers and Educational Personnel Commission (2020) in the Ministry of Education had the idea that assessments must not burden teachers, especially by duplicating work to support a variety of assessment objectives. The quality of their actual teaching should be a basis for promotion. Many countries use information technology systems or teacher performance appraisals, as evidence-based evaluative tools. According to research by Mandal et al. (2010), such online assessment systems reduce the time needed to process the data, and decrease their chances of false results.

Yamkasikorn (2021) developed a tool to assess teaching proficiency in actual classrooms using concepts, policies, typical assessment defects, and past teacher assessment models. This tool was comprised of structure and indicator sets covering all teaching types: (1) general subject teachers; (2) special subject teachers; (3) elementary education teachers; (4) informal education teachers; and (5) vocational teachers. Each set included two groups of competencies: (1) learning management, student attention and groups; and (2) learning outcomes. However, using the teacher performance appraisal system is a major concern among the agencies involved in assessing teachers. The agencies directly involved should have a performance-appraisal system to evaluate and enhance teaching performance (Rasheed et al., 2011). Objective assessments of professionalism and improving the quality of teaching are centrally important.

Given the advances in information and communication technology, such as its speed, time-saving, and cost-saving nature, the research team used the G-suit. It captured the classroom activities, and assessors can access them wherever they are. This research aims to answer two questions: (1) Is it possible to use information and communication technology as a tool for assessing the performance of government teachers and other educational personnel? (2) How will the assessment results lead to policy proposals? The research insights will help create less intrusive and burdensome evaluations so that teachers can focus more on teaching.

The objectives of the research were as follows: (1) to assess the process of assessing professional expertise of government teachers and educational personnel in teaching by using information and communication technology as a tool for implementation; (2) to propose the policy proposals of assessing expertise in the professional practice of government teachers and educational personnel in the teaching career to implement them in the professional development of teachers.

Research methodology

This research used a mixed method research methodology by adopting an exploratory design in two stages, starting with a qualitative approach. When the findings of the qualitative research were released and this outcome was used to continue gathering the quantitative data. (Rattana Buasonte, 2011)

Scope of the Informants

1. The informants were 22 experts who assessed the videos obtained by purposive selection.

2. The experts who confirmed the policy proposal summary were the same group responsible for assessing the videos. Not less than 80% of the 22 qualified people by voluntary selection. The experts had to have a Master's degree and at least 20 years of experience as teachers. with more than five years of teaching or educational work experience (Patton, 1990).

The teaching videos used as case studies were 12 teachers selected by purposive sampling according to the selection criteria. They each had a minimum academic standing of "expert teacher" or higher. All of them willingly submitted their teaching video (Patton, 1990).

Variables

The assessment of the joint committee on standards for educational evaluation in four aspects: Utility, Feasibility, Propriety and Accuracy (Klinger, D.A. and others, 2015).

Conceptual Frameworks used in the Assessment Process

This assessment system was based on a variety of assessment concepts and models which aim to meet the goals of both assessment and teacher development with feedback and support that facilitate such improvement. This includes the principle of creating diverse career paths, ongoing professional advancement, teaching responsibilities, and performance-based compensation. Consequently, the design of the system focused on covering both the goals and the end results of student learning more and better, according to the objectives of educational management. Operational procedures and storage-assessment methods cover teaching, professional practice, and outcomes for the students. The researchers used a four-system assessment standard as shown in Figure 1.
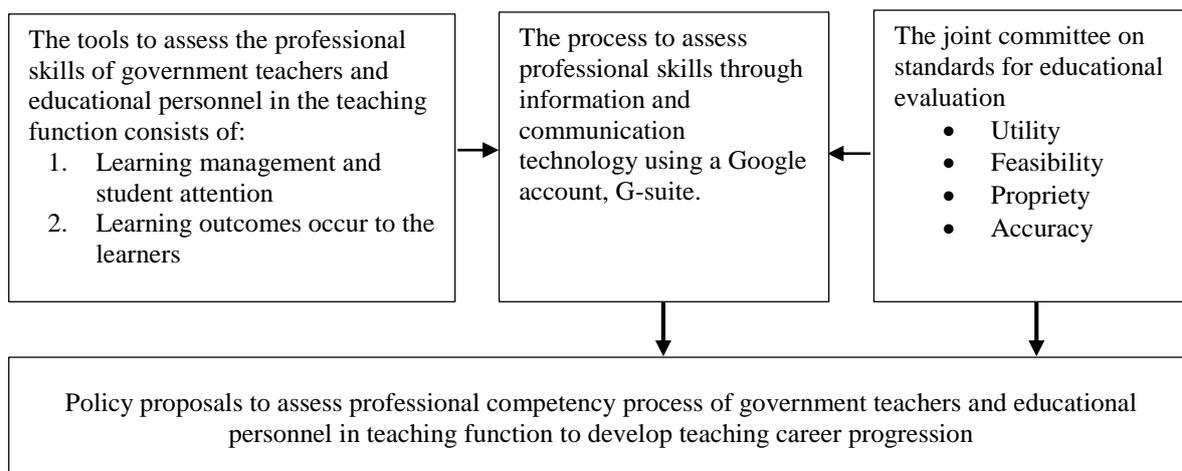

Figure 1 Conceptual Framework of the Evaluation Process
(Centers for Disease Control and Prevention, 1999)

Context

This research is part of the development of the assessment process of expert government teachers and other educational personnel. In Thailand, there has been an ongoing development of the teacher assessment concept since the beginning of systematic education management in 1960 (Office of the Education Council, 2013). Early on, teachers were simply evaluated by their superiors each year. In order to be promoted, teachers were expected to do research on teaching and learning, media developments, and innovations in learning management. Typically, there was an annual teaching demonstration and an assessment to decide on a promotion will be separated.

Informants

The 22 experts who assessed the videos included nine males (40.91%) and 13 females (59.09%). Four of the participants (18.18%) were university professors; four were expert teachers, four were supervisors, and three were school directors (13.64%); while the other experts (two people or 9.09%) were specialized teachers, along with two professional teachers and two regular teachers, while one (4.55%) was an education administrator. These experts had more than 20 years of teaching and education related work experience (70.6%), five to 20 years of experience, held a doctoral degree (52.9%) and a Master's degree (41.2%).

Research tools

This research included the first tool developed for assessing the expertise of teachers through information technology systems in Thailand. This tool was comprised of five categories: (1) general subject teachers; (2) special subject teachers; (3) elementary education teachers; (4) informal education teachers; and (5) vocational teachers. Each group consists of two types of competencies: (1) learning management and student attention; and (2) learning outcomes. Each group consisted of structures and teaching assessment indicators of the two groups of competencies: (1) learning management and student attention, with a value of 50 (30% individual learner learning outcomes, 10% learning achievement, and 10% student attributes); and (2) competencies involving learning outcomes. The weight value is 50 (30% individual learner learning outcomes, 10% learning achievement, and 10% student attributes). It is performed with the results of the reliability analysis by using the generalizability theory. It was determined that situations with six assessed areas, and two to three assessors had the highest G coefficient of .50, indicating moderate reliability. The indicator details are stated in Table 1 (Yamkasikorn, et al., 2021).

Table 1 Number of Indicators in a Performance-Assessment Tool

Assessment Items	Indicators				
Performance Group 1: Instructional practice (value= 50)	categories 1	categories 2	categories 3	categories 4	categories 5
1. Lesson preparation (10%)	5	5	5	5	5
2. Classroom environment (20%)	4	4	4	4	4
3. Learning strategy (20%)	10	7	8	9	7
Total	19	16	17	18	16

Table 1 (continued)

Assessment Items	Indicators				
Performance Group 2: Learning outcomes (value= 50)	categories 1	categories 2	categories 3	categories 4	categories 5
1. Student performance (30%)	5	5	4	5	5
2. Student achievement (10%)	1	1	1	1	1
* Student development (only set 3)					
3. Student attributes (10%)	1	1	1	1	1
Total	7	7	6	7	7
Total indicators	26	23	23	25	23

The researchers then used the tool to develop a system for evaluation by creating in the G-suite system of the Google account to send experts to assess the video.

Assessment Process Issues

It is an assessment form to develop the teaching-performance assessment process through an information technology system consisting of two parts: basic information and the development of teaching performance assessment process. It is a five-level estimation scale (strongly disagree, disagree, not sure, agree, strongly agree). According to the assessment of the joint committee on standards for educational evaluation, there are four aspects: utility, feasibility, propriety, and accuracy (Centers for Disease Control and Prevention, 1999). A total of 22 items were examined for the conformity index of three experts, with a consistency index of 0.67.-1.00, and the issue has been improved to be appropriate according to the advice of experts.

Policy Proposals (draft)

To confirm the conclusion of the policy proposals used for the group, the suggestions were divided into policy proposals to the Ministry of Education and such proposals to government teachers and the Education Personnel Committee (GTEPC). This was suggested by experts and using the G-suite system for assessing expertise.

Data collection

The assessment process involved one video for each of the 12 teachers, with outside experts conducting evaluations with the help of questionnaires and discussions. After the experts agreed, a training course was organized to clarify the process of evaluating the videos of face-to-face technical learning management. The duration of the training was one day, and the details are as follows:

(1) the login process used a Google account (G-suite), with each person getting a unique e-mail and password to access the assessment system. After the assessors completed each item, they got a summary of the report in a pdf file. To change the evaluation results, all actions can be duplicated and retransmitted, but it could not fix some parts.

(2) if there was a problem, the assessors could contact researchers at any time for clarification of the description of the indicators, scoring, and teacher-behavior observation during the assessment.

3. Twelve video assessments were conducted covering computer science, English, Social Studies, Math, Thai, and occupational work classes in grades 11 and 12; the videos are of teachers in the Bangkok metropolitan area and upcountry. Once the assessors understood the assessing tool, the researchers gave them seven days to complete the

evaluation. About two weeks later, the researchers drafted a policy proposal for the experts to confirm via an online group discussion.

Research Results

The research results were as follows:
The experts suggested these steps for implementing the information technology system:

Step 1: To record basic information by requesting a password from a central system, where the teachers can submit their own basic information.

Step 2: To submit the video and learning management program into the personal portfolio profile (PPP) system.

Step 3: The assessment system administrator got the files from Step 2 to link the learning management plan, video, and an assessment form as a set for convenience and to prevent confusion among assessors.

Step 4: An assessment system administrator sends data to the experts to evaluate according to the assessment criteria. This was done by e-mail from the central system. The assessment was only done on the online system. The assessors conducting the assessment received the following items: (1) an unedited full-hour video program; (2) a learning management plan; and (3) work and/or the results in the form of photographs, videos, or any other forms.

Step 5: The assessors conducted their evaluations in the system according to the list specified in the form and indicators according to the assessment criteria. There is only one answer per item with a five-level estimator, as defined in the scoring system with all the items. The file was saved and submitted.

Step 6: After the assessors have completed and submitted their results, the system administrator processed the average scores and summarized the recommendations to proceed in accordance with the steps suggested by the GTEPC.

According to the Joint Committee on Standards for Educational Evaluation, the four key elements are utility, feasibility, propriety, and accuracy. A total of 19 people (from 22 in total) returned the following comments:

Table 2 Levels of Opinions on the Teaching Performance Assessment Process using an IT System based on the Joint Committee on Standards for Educational Evaluation

Context	M	S.D.	Cronbach's α
Utility			
1. Using an online assessment tool is beneficial to those involved or affected by the assessment.	4.53	1.02	0.951
2. The online assessment process enables rapid assessment and a summary of the expertise of teachers.	4.47	0.96	
3. The online assessment process leads to savings.	4.68	0.95	
4. Online assessment is easy for assessors.	4.32	1.06	
5. Online assessment can eliminate the interest-related matters, thereby resulting in reliable assessment results.	4.21	0.79	

Table 2 (continue)

Context	M	S.D.	Cronbach's α
6. The online assessment system provides valuable findings to the teachers to improve their work.	4.32	0.75	
Feasibility			
7. This system is practical.	4.32	0.95	0.922
8. The assessment process is feasible in practice.	4.16	0.76	
9. The duration of the assessment is reasonable.	4.16	0.76	
10. It is possible to assess videos online.	4.53	0.77	
11. It is possible for assessors to conduct assessments online.	4.47	0.61	
Propriety			
12. The online assessment system provides a visualization of the study environment, the reactions the students, and clearly captures the skills of the teachers. It is an assessment based on actual classroom conditions.	3.63	1.07	0.952
13. Online assessment is ethically appropriate, as it is conducted for the rights and interests of those involved and affected.	4.00	1.05	
14. Online assessment is open and fair, with no conflicts of interest.	3.89	1.24	
15. The steps of the assessment are arranged in proper order.	4.21	0.92	
16. The scope of indicators and criteria used in the assessment is clear and appropriate to the situation.	4.16	0.83	
17. This assessment is appropriate both in practice and duration.	4.21	0.85	
Accuracy			
18. Online assessment has high processing accuracy.	3.74	1.19	0.951
19. The preparation of the report was impartial, and used common procedures and standards.	4.11	0.88	
20. The assessment results are reliable.	4.05	0.91	
21. The interpretations and assessment reporting are clear.	4.11	1.10	
22. The results of the online assessment are characterized by correct information with a few errors.	3.74	1.10	

Most of the experts agreed on key points, especially in terms of economy (Item 3), the benefits for those involved and affected by the assessment (Item 1), and the possibility of online assessment (Item 10). They determined that the online assessment is closest to the actual conditions in the classroom (Item 12). The experts had concerns about the processing accuracy and the summary of the assessment results online (Items 18 and 19). Some of their comments were as follows: "Assessment from a one-hour video may not be comprehensive." "Online assessments should create the understanding of judges in order to have as many perspectives as possible." "Be careful about not letting this process become a substitute for training teachers and ad-hoc staging." "When students know that the teacher is being video-recorded, they will cooperate very well, so we may not see the real situation clearly." Overall, the experts agreed that the procedure was appropriate and feasible. This process

facilitates empirical teacher assessment and is convenient as a way to evaluate the abilities of educators. After the policy proposals were revised, the results were as follows:

Proposal to the Ministry of Education

(1) There should be policy communication to the public from the Ministry of Education which reflects the promotion of career paths for teachers and educators. The teachers' professional performance must produce positive learning outcomes among their students. This new form of assessment will be broadly accepted and is more cost-effective.

(2) Information and communication technology structures should be developed into the Cloud system and funded by the government for the benefit of all teachers, students, and administrators. Under the Ministry of Education, this can be used as data collection in accordance with the assessment process. This will allow all the data to be analyzed so as to create better planning and teaching based on very accurate information, and with less bias in the process.

(3) All personnel should be fully informed about this process. In other words, full transparency is essential for this to be effective.

Policy proposals to the Government Teachers and Education Personnel Committee (GTEPC)

The new assessment process should have the following characteristics:

(1) a large amount of storage space in the Cloud to support the collection of video program files, still images, document files, etc.

(2) a process for systemic security of the applied technology and administrative security

(3) the ability to easily link video program data, still images, document files, and other assessment items for the users (assessors)

(4) an assessment-processing system that classifies the evaluation results of the same data set to be presented together

(5) a feedback system such that, when the assessment results have been imported into the system, documents or proof of response are required. The summary of the assessment and traces of work should be recorded and demonstrated.

(6) an automatic processing system to determine the average of the assessments from multiple assessors and which can be presented in different graph formats

(7) a logbook when importing the assessment results into the system, with evidence of the time stamp displayed each time for every item

A record must be kept when the teachers and other educational personnel save or import personal data to enter the online assessment process. There should be an enforcement process according to the following groups: 1) those requiring immediate login, 2) those that must be logged in when it is time to request an assessment, and 3) those who enter voluntarily. System administration should be centralized at the national level and the system must be able to assign certain data- management permission to sub-departments at the regional office level, provincial educational level, and others

1) The essential skills of the educational staff must be clearly stated before the assessments.

(1) A qualified assessor who is responsible for evaluating the teacher's learning-management should be well-versed in what makes exceptional teaching. Likewise,

a precise understanding of the qualifications and performance of the assessors themselves is crucial to their evaluations being seen as valid and fair.

(2) To organize the information properly, the personnel responsible for managing the IT system need to have both district office level to carry out the duties of importing, exporting, and managing information related to assessment at the regional/ provincial and national levels.

2) There should be a training course for assessing the performance of teachers and other educational personnel. This should involve academic work, traces of academic work, student work, and the learning-management video program. There must be an understanding of the philosophical assumptions behind the assessment, and this must emphasize the actual experience of students. Additionally, such evaluators must be adept at the relevant technology and fully aware of the standards and indicators regarding such assessments.

3) Evaluation of the learning-management video program should be done by at least three assessors, who should have similar experience as educators. If the evaluation results differ by more than 1 score for any item, the experts should confer to reach a conclusion. In this regard, the conditions of the video program should have the following properties: (1) the file resolution must not be less than 720 p. (1280 X 720); (2) the file type should be in the mp4 format; (3) the number of frame rate must be at least 25 images; and (4) the programs recorded in each video must not be edited or used for anything else, and must have a parental-consent document to be distributed to the public.

4) Great care must be taken regarding publication of any media and symbols used in the classroom, in accord with copyright law.

5) There must be objective standards regarding implementation of the assessment process vis a vis the relevant government agency (the Office of Informal Education, the Office of General Education, the Office of Vocational Education, and the Institute for the Development of Teachers, Faculty Members and Educational Personnel) to disseminate and create a basic understanding among teachers and all relevant educational personnel.

6) The management of this assessment process should have a plan of action in three phases:

(1) In the initial phase, there should be people involved whose task is to deal with confusion and any other problems with the system. The information should be entered into the system by one school only to have one point by allowing the school administrators to import the information about teachers in that school. These administrators must scrutinize all data to make sure they're correct before they import it into the system.

(2) During the development phase, when the system has been used continuously for at least two years, there will of course be some problems and even failures within the IT system. So, during this time, each teacher should be allowed to submit their own data into the system. However, the system must have a procedure approved by the supervisor of that system regarding the rights of the system as defined and designed in advance.

(3) During the progressive phase, all teachers can be responsible for importing and modifying data, but we still need a moderation process involving the opinions of supervisors.

7) When taking the assessment list of the learning management video program to be used in the actual assessment, there should be qualified assessment to guarantee that the process will be successfully performed. This is to bring the information to improve an easier assessment and to provide accurate data as possible.

8) The assessment of videos has a significant impact on teachers, so this process must be very clearly defined, reliable, objective, and fair.

The related agencies in Thailand can be used as an important database of guidelines for improving the evaluation of teachers in all fields. This IT approach can reduce the spatial and contextual disparities of each teacher from having to compare with the same criteria across the country. One key goal is to reduce the paper documentation. Of course, the highest goal is to improve the quality of teaching across the nation.

Discussion

The process of assessing the work of teachers must be systematic. Using this IT approach really contributes to achieving this goal. The assessment process can assess teacher competency from teaching videos. This is consistent with the Houston Independent School District's (2015-2016) teacher appraisal and development system. The end of year report found that the teachers who assessed their competency at High had a significant impact on student performance. The factors influencing the performance assessment system were consistent with the Bone et al. (2021) study in Limboto District of Indonesia. These factors are as follows: (1) the accuracy of the data, i.e., that the data entry in the system satisfies the actual criteria, and is reliable and practical; (2) the personal factors involving the performance of teachers meets the requirements for the success of this system because it consists of potential competence (IQ) and actual competence, such as knowledge and skills, which means that teachers have an extensive educational background in their field of study; and (3) the system is particularly useful in evaluating the performances of teachers, and non-networked schools can enter their information in networked areas (Bone et al., 2021). An effective appraisal is balanced between performance assessment and personal development assistance of teachers. This research highlights the complexity of assessing performance and its impact on teacher performance. In addition, it suggests that a key aspect of the national performance and development framework of AITL that assesses performance encompasses both assessments during learning management and the learning outcomes. Besides registration, accreditation, and certification process, the process also pursues methods to influence teacher performance and to maintain teacher standards and development. AITSL offered a broad range of school-performance assessments in three stages: the reflection phase and the goal-setting phase, the professional practice and learning phase, and the period of feedback and review.

Policy proposals from our research in using the Digital Performance Appraisal (DPA) System (2021) were consistent with the criteria and methods for assessing the position and academic standing of government teachers and other educational personnel.

The policy proposals can make a big difference in the quality of teaching. This is consistent with Elliott (2015), regarding the statement of clarity regarding the purpose and implementation of such assessments. Ideally, our work is part of a professional, collaborative culture that contributes to the continuous improvement of teaching.

The use of using information and communication technology was advocated as a tool for assessing government teachers and other educational personnel. There are many advantages to this, such as economy and collaboration with real conditions in teaching and learning processing. This system can also eliminate matters related to interests. The teachers can use the assessment results to improve their teaching.

The assessors must study and master the user manual before beginning their evaluations. The responsible agencies should develop a training course for assessors in each academic field so that they have standards that are as uniform and objective as possible. The limitations of the research are intended to create a pilot baseline for examining the feasibility of assessing teachers by using videos of their classes. This then led to the formulation of policy proposals. The information-technology system uses the Google account G-suite to operate, which will lead to the formulation of policy proposals regarding the creation of the actual system of the relevant agencies in the future. Future research should monitor and evaluate this assessment system in terms of empirically verifiable evidence of more effective teaching.

Conclusion

This research focuses on the performance appraisal of teachers concerned with teaching professional skills of government teachers through an un-cut video program which was recorded from the classroom. The primary assessment issues concerned teaching performance on learning management and student engagement on learning. This research was a pilot study to examine the feasibility of on-line teachers and the performance appraisal of educational personnel in the Thailand education system.

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