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# Developing a Systematic Subject Instruction Curriculum in Student Teaching Practice

—Through the Development and Application of Rubrics—

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**Abstract:** In the practical training at Hiroshima University, we provided practical training guidance using rubrics. Based on the appraisal of the apprentices based on the rubrics and analysis based on the descriptions in the questionnaire and the lesson plan, we found that the rubrics are an effective tool for clarifying the goals to be achieved in the initial stage of apprenticeship and the policies that apprentices should take.

## 1. Introduction

Various initiatives have so far been enacted by the social studies department at Hiroshima University Junior High School and High School Fukuyama, in cooperation with the university itself, in order to enhance student teaching practice there. Specifically, these include initiatives <sup>(1)</sup> focused on improving Student Teaching Practice Guidance B (below, Student Teaching B) and analysis <sup>(2)</sup> of student teachers' problems at the lesson plan creation stage.

Among these initiatives, with recognition of the problems encountered by student teachers at the lesson plan creation stage and the insufficiently effective use of what they had learned at the university, we reviewed the composition of Student Teaching B with a focus on lesson plan creation and reconstructed it so as to enable the creation of lesson plans which will serve as the basis for classes with well-integrated objectives and inquiries. In addition, we noted trends including that student teachers tend to struggle at the stage of teaching materials research in Student Teaching B, and that during the process from Student Teaching B to Student Teaching Practice I/II (below, the Practicum), student teachers are able to overcome their struggles with teaching materials research but often stumble at the stage of class composition.

Thus, we resolved to create rubrics as orientation aids which would enable student teachers to objectively recognize and overcome their own struggles, as well as to study the changes in student teachers over the guidance process.

## 2. Research objectives and methods

The research objective was to develop a rubric enabling integrated guidance in Student Teaching B and the Practicum, in order to provide student teachers with a tool for objectively analyzing and improving their own work. The study was conducted over a two-year period.

In the first year, we used a rubric for Practicum instruction, examining the evaluation of lesson plans and classes by student teachers and faculty supervisors and the efficacy and points for improvement of the rubric through analysis of a post-Practicum survey of student teachers. In the second year, we created a rubric based on the analysis and points for improvement of the first year, which was used for instruction in both Student Teaching B and the Practicum. Student teachers and faculty supervisors used the rubric for evaluation of the student teachers' lesson plans in Student Teaching B and of their lesson plans and classes in the Practicum. A survey of student teachers after both courses enabled analysis of their progress from Student Teaching B through the Practicum as well as comparison with students who underwent the Practicum without taking Student Teaching B; thus, we examined the degree of efficacy of guidance using the rubric in Student Teaching B and how much it had been improved, demonstrating a method that is easy to use for both student teachers and their supervisors, and enhances the practical results of student teaching.

### 3. Creation and intent of the rubric

Based on existing research, student teachers' struggles can be roughly categorized into those at the teaching materials research stage and those at the lesson composition stage. Further, the former can be categorized into insufficient teaching materials research, inappropriate selection of teaching materials, and insufficient decision on learning content, while the latter can be sorted into insufficient goal setting, insufficient lesson task setting, insufficient creation of exploration routes, lack of planning of instruction methods, and insufficient preparation to stand in front of the class. In addition, based on student teachers' reflections, struggles at the initial student teaching stage often occur in teaching materials research, deciding on learning content, goal setting, learning task setting, and creation of exploration routes. While the issues of teaching materials research and deciding on learning content are resolved during the Practicum, student teachers continue to struggle with setting learning tasks and creating exploration routes, and new practical struggles arise due to the selection of teaching materials, etc. In other words, there are differences between the struggles before and at the initial stage of student teaching and those during and after student teaching, and their ratios also increase according to type, as shown in Table 1.

Table 1 Distribution of stumbling of trainees by period

	Before practicum	During practicum	After practicum
Teaching material research	Very much	Many	
Selection of teaching materials			Many
Determination of learning content	Many	Many	
Determination of lesson goals	Little	Little	Little
Setting of learning tasks	Many	Many	Many
Logical composition of class	Many	Very much	Many
Teaching method in class			
Poised to class			

Analysis of the differences among the individual struggles indicates that, with regard to the selection of teaching materials, during the Practicum the teacher supervisor usually tells the student teacher which unit to work on, largely eliminating struggles at the initial stage; however, when actually creating lesson plans and holding classes, students realize just how difficult it is to select teaching materials within the unit and choose the most appropriate unit composition for the yearlong lesson plan, in other words, just how much they need to learn to prepare for work beyond their Practicum. In this way, a systematic view of the individual struggles can be organized as in Figure 1.

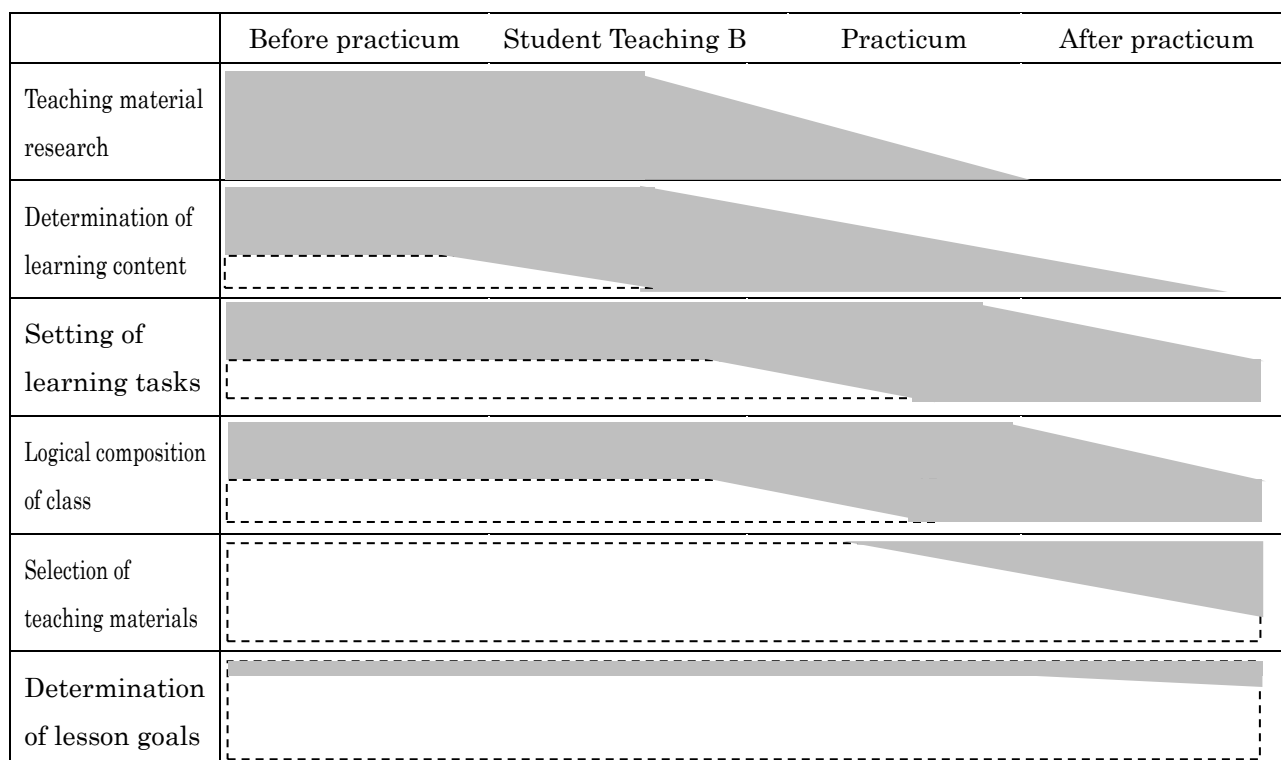


Figure 1 The stumbling that the apprentice recognizes and the stumbling that cannot be recognized

The shaded part of the figure shows the areas in which student teachers are aware of their own struggles, and the part outlined with a dotted line shows the struggles they are not aware of. As seen in Figure 1, struggles exist even in areas most students are not aware of; they may fail to notice them because they are struggling at the previous stages.

The analysis so far suggests that struggles can be divided into those faced when creating a lesson plan and those students become aware of when reviewing their plan and actually holding class, and that students face both over time. Thus, at the stage when they have overcome struggles with teaching materials research and learning task setting, students face struggles with goal setting and creating exploration routes, and that order cannot be reversed (for example, struggling with teaching materials research while class goals are clear). From this perspective, we analyzed the factors in each struggle and established the following hypotheses.

(1) Teaching materials research is a struggle faced at the Student Teaching B stage, and while it is

largely overcome at the Practicum stage, it should be resolved first in order to enable students to recognize other struggles while continuing their teaching materials research.

(2) Like teaching materials research, learning content and learning tasks are struggles faced at the Student Teaching B stage. However, they can be considered higher-order struggles than teaching materials research, as they will not be resolved unless students start considering the connections among various diverse teaching materials, along with expanding their teaching materials research.

(3) Many student teachers feel that they struggle with creation of exploration routes at the Student Teaching B stage; as they often recognize this as a new struggle while working on teaching materials research, and as many are not able to resolve it even after the Practicum, it can be considered a higher-order struggle than learning content and learning tasks.

(4) Teaching materials selection and goal creation are struggles students recognize after beginning the Practicum and holding several classes; given that they are recognized while addressing other struggles, that they continue to be issues even after teaching materials research can be smoothly handled and learning content areas of work become clear, as well as that many students are not aware of them even after the Practicum, they can be considered of a higher order than all the other struggles.

Based on these hypotheses, the four rubric perspectives, organized for ease of understanding on the part of student teachers, were set as (1) teaching materials research, (2) knowledge, (3) question creation, (4) lesson plans. Given the limits on student teachers' work time during Student Teaching B and the Practicum, conducting teaching materials research during training is difficult. Therefore, the teaching materials research perspective was limited to self-evaluation, without supervisor evaluation.

When creating the rubric, keywords were selected from existing documents to enable student teachers to recognize them easily. For the knowledge perspective, keywords included the connection of continuous knowledge as well as expansion demonstrating the connections with other units and other subjects; for the question creation perspective, they included the vertical relations of questioning and the careful selection and composition of questions based on pupils' thinking. For the lesson plan perspective, as the presence of specific keywords may create difficulties in evoking suitable imagination on the part of student teachers and lead to overly static lesson plans, keywords included the connection between class development and goal setting, as well as "view" awareness including views on the subject, the teaching materials, the unit, and the pupils. Three levels of evaluation were selected, to avoid difficulties in judgment due to overly fine divisions. Further, because students recognize and overcome struggles at different times, evaluation for question creation and lesson plans during the Practicum was limited to a maximum of two levels, and a third and highest level was presented as a final goal for students upon actually becoming professional teachers. In addition, as noted above, it was felt that student teachers needed to be clearly shown in the various perspectives that the struggles come in a specific order. As a result, the following perspectives were indicated.

Perspective 0: Evaluation of teaching materials research

Perspective 1: Evaluation of knowledge

Perspective 2: Evaluation of question creation

Perspective 3: Evaluation of lesson plans

Perspective 0 was so named to make it clear that it covers self-evaluation on the degree of teaching materials research done before the Practicum, rather than evaluation during the Practicum.

Perspectives 1 to 3 are those requiring attentive approaches when creating lesson plans in Student Teaching B and preparing for classes during the Practicum, clarifying what student teachers need to focus on during their Practicums.

Figure 2 Rubric used in teaching practical training

Educational practical training / Social Studies Rubric

	Items related to class preparation	Items related to the lesson plan		
evaluation	Perspective 0 Evaluation of teaching materials research	Perspective 1 Evaluation of knowledge	Perspective 2 Evaluation of question creation	Perspective 3 Evaluation of lesson plans
3	Apprentices have been able to read and critically analyze texts that deepen their understanding of textbooks.	Apprentices are conscious of the content handled in the unit, and are conscious of the connection with the knowledge of other units and subjects.	The trainee can select a plurality of questions along the development of the lesson according to the configuration of the lesson, and make the configuration based on the student's thinking.	Apprentices set goals based on their views on subjects, teaching materials, units, and students.
2	Apprentices have read and understood the textbooks that deepen their understanding of the contents of the textbook.	Apprentices are aware of the continuous connection of knowledge that is relevant to the content of the unit.	The trainee can ask a plurality of questions along with the development of the class in a structure that is conscious of the hierarchical relationship of the questions.	The class development that the trainees considered has been properly linked to the goal setting.
1	The apprentice understands the contents of the textbook.	Apprentices are embodying the knowledge they want students to acquire.	Apprentices can ask one-off questions in line with the development of the lesson.	The relationship between the lesson development that the trainee considered and the goal of the unit is weak.
0	Apprentices do not understand the contents of the textbook.	Apprentices are not embodying the knowledge they want students to acquire.	Apprentices have not been able to formulate questions in line with the development of classes.	Apprentices have not been able to set goals according to the content of the unit.

Based on the analysis so far and the feedback from the first year, the rubric used during student teaching guidance in the second year was created as shown in Figure 2. Distributed to student teachers during their orientation, the rubric was used as a basis for their self-evaluations during student teaching guidance and after the Practicum, as well as for faculty supervisors' evaluations from perspectives 1 to 3.

4. Guidance and results in Student Teaching B using the rubric

This academic year there were 18 students taking Student Teaching B for social studies. Analyses were conducted based on their evaluations and reflections as well as faculty supervisors' remarks. First, a free-response questionnaire was conducted at the end of Student Teaching B for student evaluation, with items as shown in Table 2.

Table 2 questionnaire items Student Teaching B

- |   |
|---|
| <p>(1) Please describe what you learned through Student Teaching B.</p> <p>(2) Please describe any stumbling points in the lesson plan.</p> <p>(3) In terms of rubric, what is your evaluation at the end stage? And please state the rationale for doing so.</p> <p>(4) With the rubric evaluation criteria, what evaluation do you want to reach after completing the practicum?</p> <p>(5) Describe what you want to do to practice in order to reach your goals.</p> <p>(6) If you feel uneasy or anxious about the practice, please write down.</p> <p>(7) Please describe any good, difficult to understand, or difficult to use rubrics.</p> |
|---|

Within the questionnaire in Table 2, the self-evaluation items indicated with (3) are shown in Table 3.

Table 3 Self-evaluation at the end of Student Teaching B

Self-evaluation	perspective 0	perspective 1	perspective 2	perspective 3
3	0	0	1	1
2	3	10	5	4
1	14	6	11	12
0	0	1	0	0

Although it was explained in advance and at the orientation that students developed in order from perspective 0 through perspective 3, the lowest average evaluation was for perspective 0. While the failure of the rubric's intent to be made clear is also an issue, a factor in the low evaluations for perspective 0 was thought to be the large number of student teachers reacting strongly to struggles with teaching materials research, as had happened the past during Student Teaching B. Next, within the questionnaire, students' responses for (1) on what they had learned in Student Teaching B are shown in Table 4.

Table 4 What I could learn in Student Teaching B (extract)

<p>Determination of lesson goals, MQ, SQ : 11</p> <p>How to connect questions : 7</p> <p>The point of view of teaching materials research : 5</p> <p>How to create lesson plans : 7</p>
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The numbers after the items in Table 4 indicate the number of student teachers responding to each item. This text indicates that the student teachers went through Student Teaching B with significant awareness of the rubric perspectives. In particular, their awareness of the class from higher-order perspectives, such as question creation, goals, and lesson plan creation, is notable.

Next, Table 5 shows excerpts from student teachers' responses on struggles in Student Teaching B as in (2) of the questionnaire.

Table 5 Points where I felt stumbled in Student Teaching B (extract)

Determination of lesson goals, MQ, SQ : 16
How to connect questions : 7
The point of view of teaching materials research : 3

These responses also indicate that student teachers had higher-order viewpoints on the awareness of their struggles in Perspectives 3 and 4. The scarcity of responses on struggles relating to teaching materials research is thought to be due to the scheduling constraints preventing time spent thereon, so that while students were aware of insufficient teaching materials research in advance of Student Teaching B, they did not recognize it as a struggle within the course.

Next, Table 6 shows excerpts from student teachers' responses in advance of the Practicum as in (5) of the questionnaire.

Table 6 Things to do by Practicum (extract)

Teaching material research : 16
Connection and spread of knowledge : 4
Techniques of Questioning : 3
Practice creating lesson plans : 5

These responses show that many student teachers are well aware of their lack of teaching materials research and clearly understand the need for deeper research for the Practicum. Further, while some had already expressed hopes to practice lesson plan creation, many were specifically interested in creating lesson plans with an eye to class composition and question creation, showing that many student teachers understand the significance of lesson plan creation in their work. Finally, remarks from faculty supervisors included the awareness on the part of most student teachers of their insufficient teaching materials research, leading to lesson plans that were often mere lists of topics.

Based on the above, a summary of the changes in Student Teaching B through the use of a rubric compared to the conventional practice is as follows.

- (1) Rather than simply pointing out the lack of teaching materials research, more specific research can be encouraged by making students aware that insufficient teaching materials research leads to a lack of clarity in class composition, question creation, and views on teaching materials.
- (2) Observing supervising teachers' classes enables learning from the viewpoint of question creation, focusing on class composition rather than contents and speaking techniques, and thereby leading to a more advanced awareness of lessons.
- (3) Student teachers' self-evaluations do not match evaluations by their supervising teachers, with self-evaluations tending to be higher; this suggests the need to provide supplementary criteria.

5. Guidance and results in the Practicum using the rubric

This academic year there were 46 students taking the Practicum for social studies, of whom 17 had received instruction in Student Teaching B using the rubric and 29 had not. The Practicum is held in both the spring and fall semesters; all 17 of the students continuing from Student Teaching B were enrolled for the spring semester. For comparison in the same time period, the control group was composed of the 8 students also enrolled for the spring semester who had not undergone instruction in Student Teaching B. As in Student Teaching B, the survey method was a free-response questionnaire on the items in Table 7 for student teachers after the Practicum.

Table 7 questionnaire items the Practicum

(1) In terms of rubric, what is your evaluation at the end stage? And please state the rationale for doing so.
(2) Please describe any stumbling points in the lesson plan.
(3) Please describe I was able to overcome the stumbling block after the Practicum.
(4) Please describe what you feel is still stumbling.
(5) Please describe what you think you should have done before Practicum.
(6) Please describe any good, difficult to understand, or difficult to use rubrics.
(7) In the Practicum, please describe the points that seemed to make use of what you learned in the Student Teaching B.
(8) In the Practicum, please describe the points that was not able to take advantage of that learned in the Student Teaching B.

All students responded to (1) through (6), and the 17 Student Teaching B students also responded to (7) and (8).

First, aggregated self-evaluations in (1) by Student Teaching B students and students who had not taken Student Teaching B (the control group) are shown in Tables 8.

Table 8 Self-evaluation at the end of the Practicum (Student Teaching B / not)

Self-evaluation	perspective 0	perspective 1	perspective 2	perspective 3
3	( 2 / 0 )	( 2 / 0 )	( 1 / 0 )	( 1 / 0 )
2	( 11 / 4 )	( 10 / 4 )	( 11 / 7 )	( 12 / 5 )
1	( 4 / 4 )	( 5 / 4 )	( 5 / 1 )	( 4 / 3 )
0	( 0 / 0 )	( 0 / 0 )	( 0 / 0 )	( 0 / 0 )

Student Teaching B students showed sharp increases in average values for Perspectives 0, 2, and 3. The rise for Perspective 0 was particularly notable, suggesting that they had conducted more teaching materials research in advance of the Practicum compared to the control group. In addition, the average values for Perspective 0 were high compared to the control group as well,



showing that the consciousness-raising guidance in Student Teaching B was effective. However, there was no significant difference between the two groups' values for Perspectives 2 and 3. Next, Tables 9 show excerpts from student teachers' responses on struggles in the Practicum as in (2) of the questionnaire.

Table 9 Stumbling in the Practicum (extract, Student Teaching B / not)

Connection and spread of class content : 7 / 0
Teaching materials research : 3 / 4
Development of class contents : 4 / 4
Finding the Right Questions : 7 / 2

The struggles of Student Teaching B students had to do more with connections among and expansion of content, as well as how to address these issues through question creation, than to teaching materials research, suggesting a sense of struggle at the level of Perspectives 1 and 2. In contrast, the control group seemed to struggle with teaching materials research and class development, that is, Perspectives 0 and 1. While the gap in experience with lesson plan creation also played a part, the effects of the rubric in Student Teaching B were evident in students' awareness of teaching materials research.

Further, evaluations by teacher supervisors were very different from student teachers' self-evaluations. Most of the student teachers were rated 1 from Perspectives 1 through 3. A comparative analysis of both sets of responses has been conducted to explain this gap. Comparison of the responses indicates differing views of teaching materials research and interpretations of the words "connection" and "expansion," suggesting gaps in evaluation criteria among evaluators. Further, teacher supervisors saw the class objectives themselves as insufficient, while student teachers did not recognize a problem and rated themselves highly on composing classes in accordance with these objectives.

Student teacher's lesson plan suggests that the student teacher had not fully understood the rubric's evaluation criteria or its original intent, which is also evident from the free responses on the rubric in (7) of the Student Teaching B questionnaire and (6) of the Practicum questionnaire, shown respectively in Tables 10.

Table 10 Opinion on the rubric (extract, after Student Teaching B / after Practicum)

Know my achievement : 5 / 7
Easy to set my own goals : 12 / 3
It is clear criterion : 2 / 2
It becomes clear point of view to see the lesson : 1 / 1
It is difficult to self-evaluation : 1 / 2
I need a concrete example : 0 / 5

Opinions included the need for specific examples of lesson plans, evaluations, etc., as, while

students were unconcerned during Student Teaching B, at the Practicum stage it was unclear what kind of question creation would be well evaluated and what kind of lesson plans should be created. These vaguely defined achievement levels may have led to the gap in evaluation between the student teachers and their supervisors.

## 6. Results and issues

In this study, we conducted student teaching guidance using a rubric in Student Teaching B and the Practicum, and evaluated its results and issues based on the writing of the student teachers and the evaluations and remarks of their supervisors.

The effects of guidance using the rubric are below.

- Clear priorities for student teachers creating lessons enable them to prepare while being aware of the steps of the process.
- Because student teachers are able to learn about the typical struggles of their category, they can devise strategies to avoid or mitigate them in advance.
- Evaluation with the same criteria enables specific awareness of personal growth and reflection.
- Clear evaluation criteria enable clear goal-setting when working as a teacher, not only during the student teaching Practicum.

However, the following issues remain with the current rubric.

- Because the rubric does not present detailed criteria, inconsistencies between self-evaluation and evaluation by others may arise, failing to produce consistent evaluation.
- If the rubric cannot be sufficiently explained in advance, interpretations of the terms used therein may differ.

Rubric improvement based on these issues is called for in future.

## 7. Conclusion

The short period of the student teaching Practicum involves a wide array of experiences. As a result, objective reflection during this period is difficult. The consistent use of a rubric can serve as a guideline for reflection after the practicum, as well as an objective evaluation index for classes taught when working as a teacher. We hope to develop a rubric that can be used in the long term, as well as the short term, by continuing our research and analysis.

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