Implementing a Teaching/Learning Procedure over an Entire Curriculum†

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This article examines the conditions required for implementation of a new procedure in a school setting, and then examines the introduction of the MoodleReader module at Kyoto Sangyo University as an example in point. We will examine the necessary conditions for implemention in both top-down and bottom-up approaches with their differing time-spans and requirements.

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1. Introduction

You are an enthusiastic teacher who likes to try new methods. You have discovered a classroom procedure which you believe is very effective. Your students seem to enjoy it, and it seems to help them learn – and even appears to improve their attitude towards learning. Let us call your discovery, NCP, for "New Class Procedure."

Now you are faced with a challenge. If the NCP is so effective, it would be good for just not you, but others in your school to also adopt it, but how can you go about it? This article discusses the necessary requirements for school- or curriculum-wide implementation of a new procedure.

The "NCP" could take any form. It could be a better textbook, a new way for students to practice what they are being taught in class, or a novel way of assigning outside work. Whatever it is, there are specific requirements that need to be fulfilled in order implement your idea across the curriculum.

Some of these requirements are:

- Your NCP needs to meet a need where other currently used methods are felt to be ineffective or inadequate. This "need," of course, should be a pedagogical objective in the current curriculum. ("Need")
- The more the implementation will effect the current pedagogical practices of teachers, causing them to rearrange their teaching practices, give-up their own "tried-and-true" methods, or perhaps cause them to lose face in class due to an incomplete understanding of the NCP, the less the likelihood that you will receive their cooperation. ("Degree of change")
- You need to have convincing proof that the NCP works, not just in your own class environment, but in others, as well, with a high degree of certainty. ("Proof")
- Is there assurance that all teachers have the requisite background knowledge to implement the NCP, or can they obtain this knowledge sufficiently before the NCP is implemented? ("Background knowledge")
- If the NCP requires equipment, is a sufficient quantity of it available? ("Equipment")
- And above all, how can you convince or require all instructors to adopt your NCP? ("Persuasion")

Curriculum-wide implementation normally cannot be achieved by simply convincing or cajoling individual instructors to adopt it, unless the instructors are few in number, or they all can participate in the decision to implement via consensus at a faculty meeting, for example. Often, however, curriculum-wide implementation relies on convincing the one individual who is in overall control of the curriculum to require its implementation. In other words, it is a "top-down" approach. Both required implementation and slow, "bottom-up" teacher-by-teacher implementation have their shortcomings. Teacher-by-teacher adoption of your NCP, requires each teacher to realize the value of your NCP, and then to learn how to implement the NCP and finally to implement it in his/her class. This procedure would need to

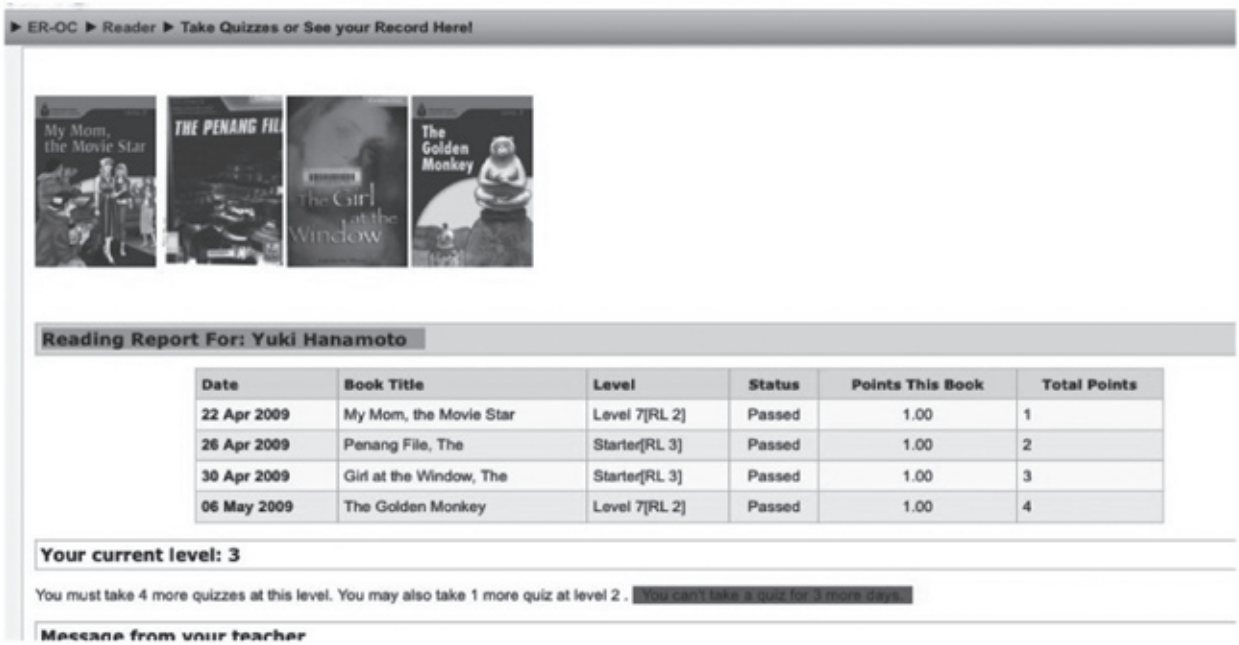
Table 1. Top-down and Bottom-up Implementation Compared

Bottom-up Implementation	Top-down Implementation
Slow Implementation	Rapid implementation
Teachers need to be convinced and "buy in" individually.	"Buy in" not required. Teachers are forced to implement whether they understand the value of the NCP or not.
Training must be done individually.	Training can be done en masse.
Probably no funding for required expenses.	The administration must ascertain that all conditions, including funding are fulfilled.
May never reach the condition of "complete implementation".	While "fully implemented" by definition, compliance may be nominal unless thoroughly monitored.

Table 2. Factors influencing implementation (From Fullan, 1992, p. 30)

Characteristics of the innovation	
1	Clarity and complexity
2	Consensus and conflict about the change
3	Quality and practicality of the change
Local conditions	
4	Central office direction, commitment and support
5	Process for implementation and institutionalization
6	Professional development and assistance
7	Implementation monitoring and problem-solving
8	Principal's leadership
9	Community support
10	Environmental stability

Figure 1. Student Progress Screen for MoodleReader



be repeated for every single teacher at different points of time, as they "come on board." With the "required approach" which we will call "implementation by fiat", all teachers can be trained at one time without having to convince them of the NCP's value, or having them "buy into" it. The tradeoffs between a gradual implementation and a "top-down" one where everyone is simply told that implementation is required are outlined in Table1.

While the above scenario covers the basic factors, scholars such as Canadian Sociologist Michael Fullan have developed a fuller scheme (Table 2) to outline the factors that can be involved in implementing a new concept. Depending on the nature of the concept to be implemented, a failure of any one of the factors could result in failure of the implementation as a whole.

We will now proceed to clarify these factors by reflecting on the introduction of MoodleReader at Kyoto Sangyo University, and then return to a general discussion of what an individual teacher can do to promote his or her specific idea.

2. Introduction to MoodleReader

MoodleReader is software that was developed by the author with the cooperation of others in the Department of English, Faculty of Foreign Languages as part of the department's Extensive Reading initiative. It was put into use for the first time in April of 2008. The program allows students to prove that they had read the graded readers that they had borrowed from the library without causing them to write a written report or forcing their instructors to read them. Students collect the cover of each book in a "stamp collection" on their own page within Moodle, as illustrated in Figure 1.

The program worked well for the English Department, so was eventually used by the Faculty of International Culture, as well. Then, based on this success, the English Curriculum Coordinating Committee for the General Education Center (henceforth, "CCC"), decided to implement Extensive Reading university-wide, for all of the first year students in their English classes, "Oral Communication" and/or "Reading Skills". Both courses meet twice a week, with some students taking both of them. In both classes Extensive Reading was required with the students expected to read a minimum of five books per course per term. Their grade would go up or down by a maximum of ten points depending on how much they read.

3. Implementation of MoodleReader across the curriculum

The basic implementation of MoodleReader was relatively straightforward since 1) the technology already existed and was in use by the Faculty of Education, 2) the developer of the program (the author) was the chair of the CCC and thus in a position, with the agreement of the committee, to require implementation across the board. Furthermore, a system was already in place for distributing final examination grades to the individual instructors, so the students' grades for their Extensive Reading could be distributed to the instructors using the same mechanism.

Thus the implementation required the following steps:

(1) A decision was made by the CCC to implement Extensive Reading the following school year.

(2) The university library was consulted about the impending increase in demand for graded readers, and permission was granted to expand the library holdings from approximately 2000 volumes to 5000 volumes.

(3) Teachers were informed of the impending implementation and provided with text to insert into their individual course syllabi specifying that outside extensive reading was an integral part of the course and that it would form part of the final evaluation.

(4) A document in Japanese was prepared for distribution to the students containing the following elements:

- The purpose of extensive reading
- Where books could be borrowed
- How to proceed with extensive reading (read quickly, full comprehension not required, little use of dictionary, etc.)
- The URL and procedure for taking the ER quizzes
- The manner in which their ER would be evaluated

(5) Teachers were requested to distribute the document in the first week of classes from copies available in the teacher lounges of each building.

(6) The administrator tracked quiz usage on a class by class basis and counseled instructors whose students had low access rates. (Some instructors had neglected to pass out the information.)

(7) The ER implementation was mentioned at length at the annual 'social' gathering of the instructors

(8) The grades of the students on the ER activity were provided to each instructor at term end, along with the final examination grades.

The implementation went relatively smoothly, although a post-analysis showed that only 68% of the students had actually taken one or more quizzes. Nevertheless, the results of the reading section of the final examination showed a significant difference in the reading scores compared to the previous year, a difference that can only be attributed to the introduction of ER (Robb, forthcoming).

We will now look at Fullan's criteria and examine the implementation of MoodleReader is this light.

4. Characteristics of the innovation

4.1. Clarity and complexity

Extensive Reading, as a pedagogical approach, is well documented although it is not familiar to many English instructors in Japan. The implementation through MoodleReader, however required little understanding of the approach itself since the English Curriculum Coordinating Committee controlled the implementation without requiring the instructors to fully understand it. Implementation effectively went from the CCC to the students with the instructors initially acting only as the messenger.

4.2. Consensus and conflict about the change

While there was a consensus among the CCC, the instructors were not initially expected to "buy into" the change but merely accept it and pass out the information to their students. There were some communications from individual instructors who doubted that the method would work, but they were, after discussion, willing to support the system. As we will see, however, acceptance of the change did, in the end, result in higher rate of participation from the students.

4.3. Quality and practicality of the change

Since the system had already been effectively implemented with some students in the school, the main problem was with practicality. Specifically, could the infrastructure support the borrowing of so many books from the library? The library, however, was cooperative and promised to order whatever books were needed, provided that they had shelf space to hold them.

4.4. Central office direction, commitment and support

Since the physical operation of the software was managed by the author, the main requirement for central office commitment and support concerned responding to problems that students or instructors had with the system. Problems such as difficulty logging in, computer crashes that prevented the student from taking a quiz that had already been partially accessed, difficulties finding the desired quiz, requests for one's assigned reading level to be raised or lowered, etc. have been handled by the software administrator, but could be taken on by office staff were there a greater commitment to the program. This is something, however, that needs to come with time. Had there been a way to assess the administrative load prior to implementing the program, the result might have been a staff decision that the program should not be implemented.

4.5. Process for implementation and institutionalization

The process for implementation has already been mentioned, but we cannot claim that the program has been institutionalized, which means that the program itself gains a life of its own beyond that of any one individual who supports and controls it. Once the value of the program is more widely understood and appreciated, the time will hopefully come where it reaches this stage.

4.6. Professional development and assistance

One advantage of the MoodleReader program was that it could be implemented without the need to directly train the instructors in its use. In fact, there are structural barriers to PD and assistance since, Kyoto Sangyo University, like most universities in Japan, relies on part-time instructors for most of its lower-level courses. These instructors are often on campus for only two classes on a particular day, either arriving or leaving at lunch time with work on another campus the remaining part of the day. Thus there is no time when teachers can be gathered together for group instruction.

MoodleReader does have a number of features which are controllable by the instructors, such as revising the level of students who are finding difficulty, removing partial quiz attempts so that they can try again, viewing lists of the

students' progress, etc. but only those with a degree of self-confidence in computer usage have ventured to access these functions, which are readily available from the instructor's menu with the software. Thus these functions are still being performed by the author until such time that they can be either be taken on by the office staff or an opportunity presents itself for teacher training. A Youtube.com-like video explanation is one route that is being considered.

4.7. Implementation monitoring and problem-solving

The software itself provides a complete listing of not only student performance, but class performance, as well. This has allowed the administrator to discover specific classes where quiz taking was lagging behind other classes and to take corrective action. There were cases, for example, where the instructor had not passed out the initial orientation sheet to the students, so only those students who had friends in other classes new about the requirement. Once these instructors were counseled and had passed out the information, the students did manage to fulfill the requirement by the end of the course.

4.8. Principal's leadership

The term "Principal" is used by Fullan because his theory was directed towards curriculum innovation in the public schools. We can re-interpret this to mean leadership from the chief administrator. At a university, however, there are many levels of administration, and for an innovation of this sort, the "principal" can be considered to be the faculty member placed in charge of the General Education Center. This individual, however, deals only with overall policy matters, and unlike a principal would not involve himself in specific classroom practices. Thus the sole source of leadership in the Kyoto Sangyo environment rests in the hands of the CCC chair and his five-member committee. Such a structure is not unique to Kyoto Sangyo and can be seen as a general barrier to the implementation of innovation at the university level.

4.9. Community support

Community support is not an issue to the extent that it can be at a public school, where the PTA can easily lobby for the implementation of a new innovation or fight against it if it does not meet with their approval.

4.10. Environmental stability

Environmental stability, however, is an issue. Technology changes rapidly and thus any pedagogical function that relies on technology must be able to adapt to a changing environment. The current MoodleReader software, for instance, runs on Moodle version 1.9.x but the next generation of the software, Moodle 2.0 has just been released and this requires MoodleReader to be rewritten from the ground up in order to work on the system. Students can currently access the system either in school or via their PCs at home, but the time may come when many prefer to take quizzes on their smart phones, so yet another adaptation might be needed in the future.

5. Conclusion

The implementation of Moodle is in some ways unique since it could be roughly implemented without involving the individual instructors, much in the same way as an external examination might be used as part of a student's course grade. This however, cannot be considered as a complete implementation because only about two-thirds of the students actually took the quizzes.

For the implementation to reach completion, all instructors need to understand and positively support it. With Extensive Reading and MoodleReader, student participation has jumped to almost 90%. Although we do not at this time have statistics to back up our assertion, most likely the perceived improvement in their students' reading, and the positive outcome of the previous year has won over some converts among the instructors. Furthermore, while in the first year we were content to merely pass out information to the students and sit back to view the results, in the 2010 school year we have been much more pro-active, having prepared class sets of readers that instructors can take into their class for orientation purposes. We have also encouraged teachers to take their classes down to the library to select their first book.

All innovations are not the same. Some changes may be simple and easy to implement, while others, that might require major changes in beliefs, time investment, equipment, etc. will be much more difficult. It is clearly easier to convince one teacher at a time, but if the innovation is one that the teacher truly believes worth introducing across the entire curriculum, then it behooves the teacher to adopted a concerted approach, keeping in mind all of the various factors

mentioned above.

It may not be possible, before introducing a new idea to predict and take into account all of these ten factors. As stated by Michael Huberman in his critical introduction to Fullan (1992), ". . . we need to act in order to create the context for reflection on what our next acts should be. The action itself will qualitatively change the situation in ways that can tell us how to plan." Thus new challenges to the implementation may well develop as the implementation unfolds. A successful implementation needs to be aware of the factors that can influence the outcome and attempt to bring them into concord with the ultimate goal.

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和文抄録

この論文は、京都産業大学における MoodleReader moduleの導入を例に取り、学校で新しい教授法・学習法を取り入れる際に必要な条件を論ずる。その実施期間と導入条件をトップダウンとボトムアップの両視点から考察し、カリキュラム全般で、いつ、どのように実施すれば良いかを検討する。

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