



## Use of Asynchronous Online Discussion for 9 year-old pupils in A Science Classroom

Lye Sze Yee  
Beacon Primary School

Young pupils are generally very enthusiastic about Science and always want to share with their classmates what they know. However, there is not enough time for classroom discussion for all to participate during curriculum time. The use of Web-based forum can possibly help solve this problem by extending the classroom time. They can participate and view the postings in the forum at home or at school so long there is Internet Connection. This paper describes how a primary school teacher used asynchronous online discussion in teaching of Science for 9 year-old pupils.

Keywords: Asynchronous Online Discussion, Forum , Science, AOD

### Introduction

Asynchronous online discussion (AOD) provides a platform where all pupils are given equal chance to participate in discussion, without the need to meet face to face. This will help to encourage the shy pupils to participate (Bali & Ramadan, 2007). Unlike classroom discussion, AOD enables the instructors and pupils to keep a record of their discussion (Salmon, 2002). Hence, they can review and reflect their progress from time to time. In taking part in such discussion, pupils are externalizing what they have known and this will engage them in higher order thinking like critical thinking and analytical reasoning (Jonassen, Carr & Yeuh, 1998).

A review of the literature on AOD shows that most research studies are conducted in higher institutions. (Bali & Ramadan, 2007; Hew & Cheung, 2003) as this group of learners are likely to be more independent and are capable of meaningful and intellectual discussion. However, there is paucity of research on the use of AOD for younger pupils. From the review, only Wong, Hew and Cheung (2008) conducted a study for the use of AOD among high ability pupils in primary school. But, such setting is atypical and hence, there is a need to conduct a similar study in a typical classroom to validate the findings.

The purpose of this study was, thus, to explore the use of AOD for a group of thirty-four 9 year-old mixed ability pupils in a Science Class. In this study, the teacher only had limited class time with her class and had little chance of conducting classroom discussion about Science in which the pupils were keen to participate. Other than the benefits outlined previously, the web-based nature of AOD could possibly extend the limited

classroom time and bring Science discussion out of the physical classroom.

In this study, a case study approach was adopted as this would offer an in-depth analysis of the case. Although this case study may not be able to provide generalization for future practice, the learning points and insights would still be invaluable to other primary teachers who have plans to implement AOD in their classes as this case “is still similar to other persons in many ways and unique in many ways” (Stake, 1995, p. 1). This research study was specifically guided by following questions: (1) how can the teacher encourage the pupils to participate in the AOD? (2) how does the AOD enhance the pupils’ learning experience?

## Participants

The participants in this study were thirty-four 9 year-old pupils (mixed ability) of an elementary school in Singapore. As the classrooms were technology-enabled with wireless connection and one-to-one computing, there had been pervasive use of technology for them since Primary 1. They would not face much problem in using AOD. Moreover, most of the pupils had Internet Access at home and could access AOD at home.

## Implementation

The AOD was created by using the Forum in the school learning management system, powered by the open source Moodle. Moodle was used in this study as both the pupils and the teacher were familiar with the system. This would shorten the time needed to learn how to use and implement the AOD. Pupils would use the AOD to discuss on topics on plants and animals.

In the study of Wong et al. (2008), the pupils were grouped into groups of 3 or 4 and the teacher established the ground rules. Similarly, in this study, the implementation would model closely after the framework proposed by Wong et al. (2008) with slight modification to suit the participants. The measures taken were:

- Pupils were briefed about the expectation of online forum. They were told to be nice and polite and keep the discussion on the questions posted
- The teacher demonstrated on how to use the AOD in the school. Pupils would try in class and surface any possible technical problems.
- Pupils were broken up into groups of 5 and each pupil was to contribute to his Group Forum instead of a Class Forum. In a Class Forum, the pupils might be put off by the sheer number of postings that he needed to read.
- Inform the parents of the AOD so that they would encourage their child to access it at home.
- A question would be posted fortnightly. The question would be ill-structured or could be a starter to a new topic. Such starter questions would inform the teacher the pupils’ prior knowledge or alternative concepts.
- The teacher constantly facilitated and promoted the use of AOD. She would praise the pupils who accessed the AOD at home or highlight outstanding posts. Alternative concepts surfaced during the online discussion were also discussed and care was taken not to make the pupils who made the mistake embarrassed.

## Data Collection Instruments

Multiple data collection instruments were used as these data sources would complement one another and would provide a thick description of what was being studied (Kervin, Vialled, Herrington & O’Kelly, 2008). The data collection instruments were:

- Teacher’s observation  
A reflection journal was kept to document the author’s observation and reflection.
- Forum postings  
Forum posting of selected high-ability, middle-ability and low-ability pupils were analyzed. Such maximal variation sampling of the posts was adopted to gain multiple perspectives of pupils’ experience in AOD. For the understanding of the teachers’ role in AOD, her postings were also analyzed.
- Perception Survey and Focus Group Discussion  
A perception survey on the use of AOD was conducted for the pupils during class time. Out of the possible 32 respondents, 27 respondents replied. 4 selected pupils were also involved in the focus group discussion
- Statistics Logs in Moodle  
Such logs would contain information like the pupil’s activity in the forum (adding or viewing the post) and the location (home or school) where they were accessing the AOD.

## Results and Discussion

### Teacher's Role

In this study, the teacher modeled the behavior in the AOD by contributing to the AOD regularly. Over the period of 15 weeks, she had contributed a total of 159 posts which worked out to about 11 posts per week. From the analysis, she posted to : initiate new discussion, ask probing questions to guide the pupils in their learning, praise the pupils and provide information. Such posts aimed to “provide administrative, pedagogic, and affective or pastoral support” (Hammond, 2005, p.34) for the pupils. In the AOD, the teacher mainly provided the role of a facilitator by asking questions or giving encouraging comments. Such online teaching presence was important especially for the younger pupils who needed the guidance. Other than active online presence in the AOD, the teacher also offered positive reinforcement to those pupils who were active participants. They would be praised in class or a private message would be sent to them using Moodle. Such positive reinforcement worked as this group of pupils felt happy to be acknowledged by their teachers and were, thus, more likely to continue to participate actively in AOD. On the other hand, the whole class (not singling out any pupil) would be scolded for not participating actively in the AOD. Such punishment will decrease the likelihood of the pupils not participating in the forum.

### Contribution Pattern

From the teacher's observation, the pupils were not participating actively in the AOD at home despite letters being sent out to the parents. This was supported by the statistical logs in Moodle which showed that majority of the posting (60%) was contributed in school.

During the focus group discussion, the diligent pupils indicated that they needed to juggle both the school and parents' homework, leaving them no time to access the AOD at home. One pupil stated that “My mother told me to do assessment all the time”. They were also not allowed to use the computer frequently as the parents were afraid that they would be playing games instead of studying. Moreover, the parents did not view such online work as “serious work” thus did not actively support their child to contribute.

To overcome this problem, the teacher decided to structure such AOD-based lessons in class. She had to drop the idea of using AOD to extend classroom time but rather use AOD as an even platform for all to participate. As the pupils had been using computers regularly since Primary 1, they had no problem logging in and accessing the Internet. Even within a 45 min Science lesson, it was possible to conduct such IT-based lessons as little time was wasted on the technical issues.

### Pupils' Learning Experience

From the perception survey, more than 70% either agreed or strongly agreed that they enjoyed both reading and viewing their friends' post. The statistical logs revealed that pupils were more active in viewing the posts (60%) than adding the posts (40%). Pupils might be too shy to views online or were not willing to willing to critique others' posts (Hemmi, Bayne & Land, 2009; Otter , Whittaker & Spriggs, 2009).

70% pupils surveyed cited being able to learn from their friends as one of the factors that motivated them to view the postings. One pupil commented “I read the Forum posts because some things my friend know I might not know thus if I read the Forum posts I can learn more”. The AOD thus provided an avenue for pupils to construct their knowledge together (Hew & Cheung, 2003). Checking if their friends had answered to the posting was another reason for viewing the posts. One pupil stated that he enjoyed reading the post because “my friend always responds to me”. It was observed that during class time, the pupils would always read the topics, which they have contributed, and checked if anyone had answered to their posts.

The analysis of the posts showed that most posts (92%) were learning-related while the remaining posts (8%) were for interaction. It was indeed encouraging to see the pupils were using AOD mainly for learning purpose. They provided information (answering their friends or the teachers' question), asked questions to clarify their doubts, corrected their friend if they were wrong and posted new topics to initiate new discussion. Some of the topics initiated included Black Hole, Cells and Atoms. One pupil reflected “it is fun and good to tell people about what you had learned.” With AOD providing an even platform for all to contribute, even the low ability were sharing their view with 16% of the posting contributed by this group of pupils. Like viewing posts, most pupils(70%) contributing posts felt they were learning as this allowed for dialogic discourse to take place. Scott

(1998) suggested that learning will be improved if the learners have a well-mixed of both authoritative and dialogic discourse. In authoritative discourse, the teacher talks, with minimal participation from learners. On the other hand, in dialogic discourse, the teacher will seek the learners' opinion and learners can ask questions. A typical classroom setting will favor authoritative discourse as it saves time. The AOD can help to complement the classroom teaching by supporting dialogic discourse as more pupils can participate. Such discourse encourages learners to think and uncover any possible alternative concepts .

## Proposed Implementation Model

Due to the “asynchronous” nature of the AOD, the pupils should ideally access the AOD at home. However, from the results of the study, the pupils were not participating actively AOD at home as parents prefer the traditional learning sheet to online work. In order to encourage participation , there is a need to conduct AOD-based lessons in class. Such intervention is necessary to heighten the pupils’ interest in AOD. Thus, in the model proposed (see Figure 1) , the pupils are accessing the AOD both at home and in school. The teacher would prefer the necessary support like facilitating the discussion and encouraging the pupils to participate. Hopefully, the pupils would be “hooked” and would “pester” their parents to allow them to access AOD at home.

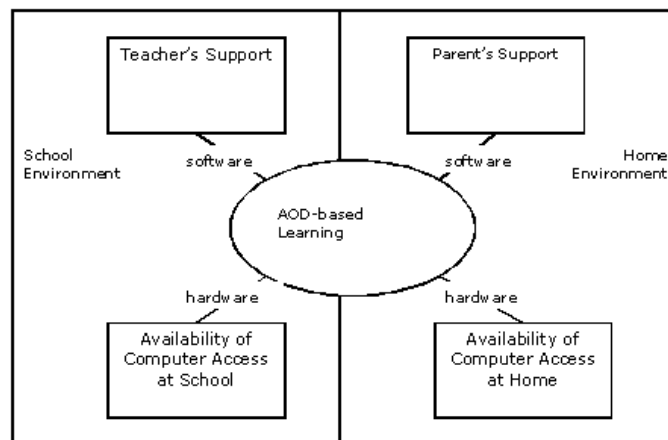


Figure 1 : Proposed Model

## Conclusion

In this exploratory study of the use of Forum for 9 year old pupils, it was found out that the young pupils were ready for such learning. They were able to contribute constructive posts and had a positive learning experience in the AOD. The teacher played an important role and had to constantly think of ways to “entice” the pupils with the use of positive reinforcement and punishment. The main challenge facing this implementation was the support from the parents. The parents were not encouraging their pupils to participate as they did not view such online work as “serious work”. However, in this paper, the parents’ perception on AOD was not studied. Information about parents’ perception would provide useful insights on how best to promote the usage of AOD at home.

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**Author contact details:**

Lye Sze Yee [lye.szevee@bcps.sg](mailto:lye.szevee@bcps.sg)

**Please cite as:** Yee, S.E. (2011). Use of asynchronous online discussion for 9 year-old pupils in a science classroom. In G. Williams, P. Statham, N. Brown & B. Cleland (Eds.), *Changing Demands, Changing Directions. Proceedings ascilite Hobart 2011*. (pp.1372-1376). <https://doi.org/10.14742/apubs.2011.1787>

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