Consecutive cycles of “whole class” Lesson Study
A format for development of shared teacher knowledge in preservice teacher education
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Consecutive cycles of “whole class” Lesson Study: a format for development of shared teacher knowledge in preservice teacher education

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Abstract
An analysis of three lesson study cycles of the same research lesson carried out by 16 pre-service lower secondary teachers. The process of lesson planning and revision is displayed and it is shown how the pre-service teachers develop knowledge about critical details of the lesson, its contents and pupils’ learning.

Research Questions

How is knowledge gained from each research lesson and post-lesson reflection incorporated in subsequent re-teaching?

What are the benefits and drawbacks of large group sizes in pre-service teacher lesson study?

Context, method and theory
In 2015, a group of 16 students attending a Danish teacher education in which Lesson Study in small groups is common, were asked to plan one research lesson collectively. The development over three cycles of a lesson plan (for a grade 8, 2X45minutes) were subjected to document analyses. The lessons and reflections were observed by the author (note-taking and video recording). All material was indexed using NVivo10 and subjected to praxeological analysis in the sense of the anthropological theory of the didactic (Chevallard & Senseney, 2014).

Knowledge development

<table>
<thead>
<tr>
<th>Initial task type (T) put to the pupils, anticipated techniques (T)</th>
<th>After first revision</th>
<th>After second revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1: Who in the class is most likely to be selected to pick up milk.</td>
<td>T1: Who in the class is most likely to be selected to pick up milk.</td>
<td>T1: Given one crooked die, who should do the dishes? What rules to make a fair game?</td>
</tr>
<tr>
<td>T2: Investigate who of three pupils are most likely to be the one pick up milk, if they use two coins</td>
<td>T2: Investigate who of three pupils are most likely to be the one pick up milk, if they use two coins</td>
<td>T2: What happens if two or more crooked dice are used? What rules to make fair game in this situation</td>
</tr>
<tr>
<td>T3: Perform a number of simulation using padlet (mobile phone)</td>
<td>T3: Perform a number of simulation using padlet (mobile phone)</td>
<td>T3: Peer/class discussion based on prior experiences</td>
</tr>
<tr>
<td>T4: Draw a schematic of sample space</td>
<td></td>
<td>T4: Perform physical simulation, take count.</td>
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<tr>
<td></td>
<td></td>
<td>T4: Perform large number of simulation using ICT (Excel spreadsheet)</td>
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<td></td>
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<td>T4: Peer/class discussion based on “intuition” about how an irregular die will perform.</td>
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<tr>
<td></td>
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<td>T4: Perform physical simulation, sample frequency as group probability.</td>
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<tr>
<td></td>
<td></td>
<td>T4: Perform physical simulation with two dice.</td>
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<tr>
<td></td>
<td></td>
<td>T4: Draw sample space (with unequal probabilities).</td>
</tr>
</tbody>
</table>

Reasons (θ) for tasks and techniques.
θ1: Pupils should become of subjective beliefs about probability
θ2: Pupils become aware of statistic probability
θ3: Pupils awareness of statistic probability variation decreases
θ4: Pupils become aware of combinatorial probability.

Associated didactic techniques (τ’est)
τ1: Use of familiar context engages the pupils
τ2: Watch video instruction about how to do simulation.

Reorganizing (Accommodation)

Benefit: Greater sense of unity. Knowledge shared and common to all participants. A greater variety of aspects can be considered in advance. Lower “cost” of educator time.

Drawback: The lesson study were initially undertaken by the whole class, but as schools and executive students were chosen, others lost engagement with the process.

Concluding Remarks

- Knowledge that the lesson does not work optimally are first sought remedied with minor didactic changes, before major changes are attempted.
- A “knowledgeable other” is crucial to overcome reluctance to make major changes.
- The semi-autonomous process of lesson study need another scaffolding to engage a whole class and thus produce didactic knowledge common to all pre-service teacher students.

References

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