Flipped Classrooms
and their Effects on Student Effort and Proficiency

Adrian Leis
Miyagi University of Education

Today's Menu
• Introduction
• Literature Review
• This Study
• Results and Discussion
• Conclusions
• Discussion

Today's Menu

Introduction

Regular Class
In class
Listen to teacher explain the text
Do practice exercises
Write compositions

At home
Listen to teacher explain the text
Do practice exercises
Write compositions

Flipped Class

At home

In class

Helpful for teaching deaf and hard-of-hearing students (subtitles in videos)
Subtitles help regular students as well
All students gave positive feedback when flipping my English composition classes

Literature review - Flipped method

Salman Khan (2012)
- Khan Academy
- All people learn and concentrate in different ways and at different times
- Teachers must provide opportunities for students to study anytime and anywhere

Strayer (2007)
- Ph.D Dissertation - Flipped method in Math
- Tasks in flipped learning need to be simple, or students may get lost
- However, there was an increase in innovation and cooperation in the classroom

Moraris et al. (2015)
- 67 graduate students
- Students were satisfied with the flipped method
- Perceived effects did not reflect grades

Davies et al. (2013)
- ICT class at university
- Regular method makes it difficult to provide individualized instruction
- Flipped learning allows personalized instruction and feedback
Literature review - Individual Instruction

Davies et al. (2013)
- ICT class at university
- Regular method makes it difficult to provide individualized instruction
- Flipped learning allows personal instruction and feedback

Morton (1960)
- Using language laboratories enables students to receive individual instruction
- Language laboratories help late-comers to join the class smoothly

Baker (2000)
- More instructors are attempting to create an environment which is more student-centered, allowing more active learning

Keefe (2007)
- The principal goal of education is to get students to learn
- Teachers must create an environment in which they can provide personalized coaching

Literature review - Flipped method in EFL

Cowie and Sakui (2014)
- Discuss blended learning in Australasian and Asian context
- Flipped learning allows students to access classroom content in a way that cannot be replicated in traditional classrooms

Ishikawa et al. (2014)
- Effects of flipped learning on coaching for proficiency tests
- Students indicated high satisfaction with the flipped method
- Students displayed high confidence of achieving high scores in proficiency tests

Mehring (2015)
- Doctorate focusing on flipped learning in EFL classes in northern Japan
- Flipped learning increased the responsibility students felt to be more active in classes
- This is vital in the traditionally passive classrooms seen in Japan (see Aspinall, 2006; Nakata, 2006).

This study - Research Questions

RQ 1. Do students in a flipped classroom environment show more effort in their studies in comparison to students in a regular classroom?

RQ 2. Do students in a flipped classroom environment show a greater increase in proficiency in comparison to students in a regular classroom?

RQ 3. What can we learn from the dynamics of student effort in the flipped group?

This study - Participants

<table>
<thead>
<tr>
<th>Group</th>
<th>Age (SD)</th>
<th>Gender</th>
<th>University Major</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>Flipped</td>
<td>19.36 (.92)</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Regular</td>
<td>19.73 (.47)</td>
<td>11</td>
<td>0</td>
</tr>
</tbody>
</table>
This study - Procedure

English composition classes using either the flipped method or regular method

Week 1
Pretest
Watching videoed explanation
Preparing compositions

Flipped Group
20 Greetings & Dictogloss
10 Q&A of video content
55 Composition writing
5 Confirming preparation for next class
Feedback from teacher

Regular Group
20 Greetings & Dictogloss
45 Textbook explanation
20 Composition writing
5 Confirming deadline preparation for next class
Completing compositions
Feedback from teacher

Week 10
Posttest & Questionnaire

Results - RQ 1 (Study time)

<table>
<thead>
<tr>
<th></th>
<th>Flipped Group</th>
<th>Regular Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before class</strong></td>
<td>(M = 122.74, SD = 51.01)</td>
<td>(M = 49.09, SD = 9.29)</td>
</tr>
<tr>
<td><em>t</em>(20) = 4.10, <em>p</em> &lt; .001, <em>d</em> = 2.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>After class</strong></td>
<td>(M = 46.36, SD = 24.61)</td>
<td>(M = 43.63, SD = 36.41)</td>
</tr>
<tr>
<td><em>t</em>(20) = .21, <em>p</em> = .839</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total time</strong></td>
<td>(M = 169.09, SD = 70.06)</td>
<td>(M = 92.73, SD = 63.58)</td>
</tr>
<tr>
<td><em>t</em>(20) = 2.67, <em>p</em> = .014, <em>d</em> = 1.14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Results are based on independent samples *t* tests

Results - RQ 1 (Number of words)

<table>
<thead>
<tr>
<th></th>
<th>Flipped Group</th>
<th>Regular Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pretest</strong></td>
<td>(M = 134.73, SD = 39.42)</td>
<td>(M = 133.45, SD = 38.50)</td>
</tr>
<tr>
<td><em>t</em>(10) = .06, <em>p</em> = .954</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Posttest</strong></td>
<td>(M = 260.45, SD = 70.06)</td>
<td>(M = 162.50, SD = 76.75)</td>
</tr>
<tr>
<td><em>t</em>(10) = 3.37, <em>p</em> = .007, <em>d</em> = 1.44</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Results are based on paired-samples *t* tests

Results - RQ 1 (Effort)

Yes!

- The Flipped Group had been given a clearer indication of how to prepare for class.
- The Flipped Group were able to access the lesson video anywhere and anytime, increasing their opportunities to study.
- The Flipped Group showed signs of autonomy, by reviewing their compositions and considering ways to improve.

“I prefer to define autonomy as the capacity to take control of one’s learning, largely because the contrast of control appears to be more open to investigation than the constructs of charge or responsibility (Benson, 2001, p. 47)”
Results - RQ 2

Despite there being a statistical difference in proficiency in the pretest, a comparison can still be conducted using a one-way analysis of covariance (ANCOVA) (see Larson-Hall, 2010, 2008; Lyster, 2004). Results showed the Flipped Method to be significantly more effective in increasing proficiency than a regular approach to teaching, $F(1, 63) = 13.50$, $p < .001$, $\eta^2 = .18$.

Effect size strength for ANCOVA

<table>
<thead>
<tr>
<th>Strength</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong</td>
<td>&gt; .14</td>
</tr>
<tr>
<td>Medium</td>
<td>0.06</td>
</tr>
<tr>
<td>Weak</td>
<td>0.01</td>
</tr>
</tbody>
</table>

(Green & Salkind, 2011, p. 213)

See Appendix D for a more detailed report.

Results - RQ 2

- The subtitles provided in the flipped classroom videos improved students’ understanding of the content.
- Because students were able to access the videos anytime, they could watch the class as many times as they needed to understand the content.
- As the explanation of the lesson had already been conducted online, the instructor was able to provide individual and personalised instruction to students in the Flipped Group.
Complex Dynamic Systems in L2 Motivation research

Several theories suggest motivation is not static, but ever-changing, measurable under a multitude of rubrics (Dörnyei, et al. 2015):

- Chaos Theory (Larsen-Freeman, 1997)
- Emergentism (Ellis & Larsen-Freeman, 2006)
- Dynamic Systems Theory (de Bot, et al., 2007)
- Complexity Theory (Larsen-Freeman & Cameron, 2008)

There is a need for more empirical studies to support the dynamic systems approach to L2 motivation research (Dörnyei, et al. 2015)

We must not forget the value of pre-posttest designed research as well. (Noels, 2014)

Note. \( \chi^2 (9, N = 9) = 40.74, p < .001, W = .503. \)

Related to the Hawthorn Effect? (Ur, 2013)

Conclusions

Using the flipped classroom method increases the initial workload for teachers

- Using the flipped classroom method increases students' proficiency
- Flipped classroom videos on video-sharing websites allow viewing anytime anywhere
- Using the flipped classroom method increases effort made by students
- Flipped classroom videos with subtitles improve understanding of content
Effects of the flipped method on motivation of students in discussion-based/conversation classes.

Watching videoed explanation
Writing compositions

Flipped Group
20 Greetings & Dictogloss
10 Q&A of video content
55 Peer-coaching

5 Confirming preparation for next class
Feedback from teacher

Note: Before: the number of minutes studied before class; After: the number of minutes studied after class; Total: the total minutes of hours studied; * p < .05; ** p < .001.

Results - RQ 1 (Study time)

<table>
<thead>
<tr>
<th>Group</th>
<th>Before (SD)</th>
<th>95%CI</th>
<th>After (SD)</th>
<th>95%CI</th>
<th>Total (SD)</th>
<th>95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flipped</td>
<td>122.74**</td>
<td>[88.46, 156.99]</td>
<td>46.36 (24.61)</td>
<td>[29.83, 62.89]</td>
<td>169.09* (70.06)</td>
<td>[122.02, 216.16]</td>
</tr>
<tr>
<td>Regular</td>
<td>49.09 (9.29)</td>
<td>[28.39, 69.79]</td>
<td>43.36 (36.41)</td>
<td>[19.18, 68.09]</td>
<td>92.73 (63.58)</td>
<td>[50.02, 135.44]</td>
</tr>
</tbody>
</table>

Note: Before: the number of minutes studied before class; After: the number of minutes studied after class; Total: the total minutes of hours studied; * p < .05; ** p < .001.

Results - RQ 1 (Number of words)

<table>
<thead>
<tr>
<th>Group</th>
<th>Before (SD)</th>
<th>95%CI</th>
<th>After (SD)</th>
<th>95%CI</th>
<th>Total (SD)</th>
<th>95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flipped</td>
<td>134.73</td>
<td>[108.25, 161.21]</td>
<td>260.45* (49.30)</td>
<td>[227.33, 293.57]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular</td>
<td>133.45</td>
<td>[107.60, 159.32]</td>
<td>162.50 (76.75)</td>
<td>[115.81, 218.92]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Before: the number of minutes studied before class; After: the number of minutes studied after class; Total: the total minutes of hours studied; * p < .01.
Appendix C

Results - RQ 2 (Proficiency changes within groups)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest (SD)</th>
<th>Pretest 95%CI</th>
<th>Posttest (SD)</th>
<th>Posttest 95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flipped</td>
<td>11.09 (3.19)</td>
<td>[9.96, 12.22]</td>
<td>15.55* (4.44)</td>
<td>[13.97, 17.12]</td>
</tr>
<tr>
<td>Regular</td>
<td>7.67 (2.73)</td>
<td>[6.70, 8.63]</td>
<td>9.70* (3.88)</td>
<td>[8.32, 11.07]</td>
</tr>
</tbody>
</table>

Note. Results are based on paired-samples t-tests; *p < .001; Max: 25, Min: 0.

Appendix D

Results - RQ 2 (Proficiency changes within groups)

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Posttest 95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular</td>
<td>9.38</td>
<td>10.57</td>
<td>[9.10, 12.04]</td>
</tr>
</tbody>
</table>

Note. Results are based on ANCOVA; *p < .001; Max: 25, Min: 0.

Appendix E

Results - RQ 3 (Dynamics of effort within the Flipped Group)

<table>
<thead>
<tr>
<th>No.</th>
<th>Topic</th>
<th>Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The effects of technology on the environment.</td>
<td>134.73</td>
</tr>
<tr>
<td>2</td>
<td>Write three diary entries about the daily life of a Japanese university student.</td>
<td>291.27</td>
</tr>
<tr>
<td>3</td>
<td>Report on an interview with your partner about one aspect of his/her university life.</td>
<td>313.89</td>
</tr>
<tr>
<td>4</td>
<td>Describe three smartphone applications that are popular for university students.</td>
<td>331.64</td>
</tr>
<tr>
<td>5</td>
<td>Describe three unusual Japanese foods.</td>
<td>317.36</td>
</tr>
<tr>
<td>6</td>
<td>Write a recipe for a food you can cook well.</td>
<td>295.64</td>
</tr>
<tr>
<td>7</td>
<td>Describe five items of a field you are interested in (e.g., musicians, animals).</td>
<td>356.27</td>
</tr>
<tr>
<td>8</td>
<td>Choose one of the items you described in Topic 7 and give a more detailed description.</td>
<td>287.64</td>
</tr>
<tr>
<td>9</td>
<td>Write diary entries for three days past week.</td>
<td>266.80</td>
</tr>
<tr>
<td>10</td>
<td>The effects of technology on the environment</td>
<td>260.45</td>
</tr>
</tbody>
</table>

Note. Results are based on a Friedman Test; $\chi^2(9, N = 9) = 40.74, p < .001, W = .503.$

Thank you for your time

Adrian Leis
Miyagi University of Education
JALTCALL 2015
June 7, 2015

adrian@staff.miyako-u.ac.jp
@adrianleis
adrianleis.weebly.com