Introduction and aims
This study, focusing on undergraduate students in Japan as primary stakeholders in EMI, aims to:
1. investigate whether medium of instruction has any influence on Japanese university students’ content learning. (RQ1)
2. examine in what ways (if any) the implementation of EMI and JMI chemistry class differs (RQ2)
3. examine language-related challenges faced by Japanese medium instruction (JMI) and EMI students. (RQ3)
4. explore the relationship between students’ English proficiency and content learning. (RQ4)

Driving forces behind EMI
EMI is synonymous with internationalisation of higher education.

- English proficiency in addition to content knowledge
- Intercultural understanding and global awareness/citizenship
- Career opportunities
- Staff employment
- Access to cutting-edge knowledge and increasing global competitiveness to raise the international profile
- Student and lecturer mobility

Reservation about EMI – gap between policy and practice

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of universities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>190</td>
</tr>
<tr>
<td>2009</td>
<td>194</td>
</tr>
<tr>
<td>2011</td>
<td>222</td>
</tr>
<tr>
<td>2012</td>
<td>241</td>
</tr>
<tr>
<td>2013</td>
<td>262</td>
</tr>
<tr>
<td>2014</td>
<td>274</td>
</tr>
<tr>
<td>2015</td>
<td>305</td>
</tr>
</tbody>
</table>

Table: Japanese universities offering subject classes taught in English by year (undergraduate programmes)

EMI in Japan
The ‘Top Global University Project’ (TGUP) A 10-year, multimillion dollar initiative (37 participating universities)

Over 40% of Japan’s 781 universities offer EMI, almost 38% increase from 2008 (MEXT, 2015).

Method
Setting
- Private, bilingual university in Tokyo (TGUP funded)

Table: The number of classes taught in English

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of classes taught in (A)</th>
<th>Number of classes at the university (B)</th>
<th>Proportion (A/B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>240</td>
<td>1,451</td>
<td>16.5%</td>
</tr>
<tr>
<td>2016</td>
<td>345</td>
<td>1,400</td>
<td>24.6%</td>
</tr>
<tr>
<td>2019</td>
<td>441</td>
<td>1,400</td>
<td>31.5%</td>
</tr>
<tr>
<td>2023</td>
<td>560</td>
<td>1,500</td>
<td>40.0%</td>
</tr>
</tbody>
</table>

Design and participants
The pretest–posttest non-equivalent control group design (Bryman, 2008)

Findings
Score change within EMI and JMI
There is a statistically significant difference between the pretest and posttest scores for both EMI and JMI students (Pre-test: Mean 7.263 for EMI, 2.560 for JMI, Post-test: Mean 9.75 for EMI, 9.22 for JMI).

Gain scores between EMI and JMI
There is no significant difference between EMI and JMI students (Mean 7.32 for EMI, 7.10 for JMI) ($t_{(11)}=1.82; p =.856; d = .057$).

Post-test and academic English challenges
There is a correlation between the students’ post-test scores and challenges ($r = 0.540, n = 17, p = 0.05$). (i.e. Lower performing students of the post-test face more challenges in EMI than their higher performing counterparts)

References
