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Instructional Practices Inventories:

Quantifying and improving students’ cognitive engagement – case studies from 3 Sydney high schools
Roles

- Education Consultant TTA 2008-2015
- School Planning and Performance Advisor 2013-2015 – High Performance Unit DEC
- Professional Learning and Leadership Coordinator 2011-2013 – NSR DEC
- Technology and Quality Teaching consultant 2009-2010 – NSR DEC
- Head Teacher/relieving DP 1996 - 2008
- Teacher 1982-1996
Background
Research and underpinnings
School evaluation

School data:
- External academic
- Engagement
  - Retention
  - Attendance
  - Suspensions
Some Processes and tools for providing feedback to staff:

- Walkthroughs: teacher focused
- Learning Walks (FLeWs): teacher focused
- Instructional Rounds: teacher/individual focused
- e5: teacher focused
- IPI- student focused/collectively studied
The evidence

- Developed by Jerry Valentine, University of Missouri
- Research studies in development and evaluation of IPIs:
  - Painter, 1998
  - Quinn, 1999
  - Quinn, Gruenert & Valentine, 1999
  - Peterson & Deal, 2002
  - Valentine, Clark, Hackmann, Petzko, 2004
  - 800 schools: IPIs and standardised tests
  - 100 schools: + IPIs, valued added, achievement
The evidence

- Rick and Rebecca DuFour and their co-editor Robert Eaker (2005):
  - Students would be better served if educators embraced learning rather than teaching as the mission of their school
  - if they worked collaboratively to help all students learn
  - and if they used formative assessments and a focus on results to guide their practice and foster continuous improvement
What is Instructional Practices Inventory?
Processes, protocols and engagement categories
Instructional Practices Inventories

- The IPI process collects data about student engagement
- The focus is on student learning rather than teaching
- It provides authentic data to facilitate conversations on cognitive engagement and improving practice
The IPI process

- Meetings – senior exec, executive, staff
- Training of data collection team: include trusted staff member and outside person
- Multiple data collections per year – usually 3
- Collaborative study of the data following each data collection – 15 Critical Questions for Faculty Consideration
- Collaborative study of the data is led by teachers
- Professional learning planned by teachers
Data collection protocols

- Typical school day, not Fridays
- Completely anonymous – no teacher or subject
- Observations one to three minutes
- May distinguish between core and non-core
- No collection in first and last 5 minutes of lesson
- “Code up” if team disagrees
- Minimum of 100 collections (125-150 preferred)
-Observers use a map to systematically move throughout the school and observe every class
- Casual teachers NO; student teachers YES
# Instructional Practice Inventory Self-Assessment Record

Record teaching practices every few minutes throughout the school day. Repeat process for multiple days and then compute your overall profile for those days.

<table>
<thead>
<tr>
<th></th>
<th>Student Active Engaged Learning</th>
<th>Student Learning Conversations</th>
<th>Teacher-Led Instruction</th>
<th>Student Work with Teacher Engaged</th>
<th>Student Work with Teacher Not Engaged</th>
<th>Complete Disengagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students are engaged in higher-order learning. Common examples include authentic project work, cooperative learning, hands-on learning, problem-based learning, demonstrations, and research.</td>
<td>Students are engaged in active conversations that construct knowledge. Conversations may have been teacher stimulated but are not teacher dominated. Higher-order thinking is evident.</td>
<td>Students are attentive to teacher-led learning experiences such as lecture, question and answer, teacher giving directions, and video instruction with teacher interaction. Discussion may occur, but instruction and ideas come primarily from the teacher.</td>
<td>Students are doing seatwork, working on worksheets, book work, tests, video with teacher viewing the video with the students, etc. Teacher assistance or support is evident.</td>
<td>Students are doing seatwork, working on worksheets, book work, tests, video without teacher support, etc. Teacher assistance or support is not evident.</td>
<td>Students are not engaged in learning directly related to the curriculum.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>7:30-7:45</th>
<th>7:45-8:00</th>
<th>8:00-8:15</th>
<th>8:15-8:30</th>
<th>8:30-8:45</th>
<th>8:45-9:00</th>
<th>9:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
<td>Description</td>
<td></td>
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<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Student-Engaged</td>
<td>Active mental engagement such as authentic project work, cooperative learning, hands-on learning, demonstrations, active research. Higher order thinking evident.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Instruction</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Student Learning</td>
<td>Active conversation among students with most or all engaged. Teacher initiated but not directed. Higher order thinking evident.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Conversations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher-Led</td>
<td>Teacher-led learning experiences such as lecture, question and answer, teacher giving directions, video instruction with teacher interaction. Discussion may occur, but instruction and ideas come primarily from teacher.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Instruction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher-Directed</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instruction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Work</td>
<td>Students working on worksheets, book work, tests, video with teacher viewing the video with the students, etc. Teacher assistance or support evident.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with Teacher Engaged</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with Teacher Not</td>
<td>Students working on worksheets, book work, tests, viewing of video, etc. Teacher assistance or support not evident.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engaged</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disengagement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Disengagement</td>
<td>Neither teacher nor students engaged in learning or teaching, such as watching video or doing activities not directly related to the curriculum.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Six distinct categories… ways of classifying how students are engaged.
It's about the % of time

<table>
<thead>
<tr>
<th>Category Description</th>
<th>“Typical”</th>
<th>Highly effective</th>
<th>Very unsuccessful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Active Engaged Learning</td>
<td>15-25</td>
<td>29.3</td>
<td>16</td>
</tr>
<tr>
<td>Student Learning Conversations</td>
<td>3-5</td>
<td>3.3</td>
<td>0.2</td>
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<tr>
<td>Teacher-Led Instruction</td>
<td>35-40</td>
<td>40.5</td>
<td>33.2</td>
</tr>
<tr>
<td>Student Work with Teacher Engaged</td>
<td>20-30</td>
<td>17.3</td>
<td>28.4</td>
</tr>
<tr>
<td>Student Work with Teacher Not Engaged</td>
<td>5-10</td>
<td>8.5</td>
<td>13.6</td>
</tr>
<tr>
<td>Complete Disengagement</td>
<td>3-8</td>
<td>1.0</td>
<td>8.4</td>
</tr>
</tbody>
</table>
6 Student active engaged learning

- Higher-order
- Deeper learning
- Typically:
  - authentic
  - hands-on
  - problem-based
  - research
  - analysis
  - creative

Higher-level engaged thought evident
5 Student learning conversations

- Higher-order
- Deeper student verbal learning

Typically:
- conversations among students who are constructing knowledge together
- explanations
- discussions
- debates

Higher-Level Engaged Thought Evident
4 Teacher led instruction

- Students attentive
- Teacher leading the learning experience

- Typically:
  - explicit instruction by teacher
  - teacher explaining
  - teacher giving directions, instructions

Higher-level engaged thought not evident (passive)
3 Student work with teacher engaged

- Students working individually or in groups
- Teacher support evident
- Typically:
  - worksheets
  - answering questions from texts
  - doing tests
  - teacher moving among students

Higher-level engaged thought not evident (passive)
2. Student work with teacher not engaged

- Students working individually or in groups
- Independent work
- Teacher support not evident

Typically:
- worksheets
- answering questions in books
- doing tests
- teacher doing other things

Higher-level engaged thought not evident (superficial and passive)
1 Students Not Engaged in Learning

- Students are not engaged with the curriculum

- Typically:
  - unfocused
  - Talking
  - inattentive

Higher-level engaged thought not evident
Why the IPI Process?

- Provides **data on HOW students are engaged** with the curriculum and with their learning and **evidence** of improvement.

- Provides opportunity for collaborative whole school **conversations about the data** and **empowers school** to make decisions about **how to use the data**.

- Encourages purposeful, job embedded **professional learning** with feedback, short term wins and long term focus on a limited number of initiatives.

- Leads to more **higher order, active and engaged student learning** and increased **student achievement**.
Case studies
3 Sydney high schools
Characteristics

- Comprehensive, co-ed, 7-12
- High socio-economic
- Competition from single sex, selective and private schools
- Mature, experienced staff
- Generally above state average achievement in external testing
- Underachieving in top bands
## High school 1

<table>
<thead>
<tr>
<th>Category Description</th>
<th>“Typical”</th>
<th>Highly effective</th>
<th>Data 1</th>
<th>Data 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student active engaged learning</td>
<td>15-25</td>
<td>29.3</td>
<td>8.33</td>
<td>8.72</td>
</tr>
<tr>
<td>Student learning conversations</td>
<td>3-5</td>
<td>3.3</td>
<td>3.47</td>
<td>3.76</td>
</tr>
<tr>
<td>Teacher-led instruction</td>
<td>35-40</td>
<td>40.5</td>
<td>15.28</td>
<td>34.89</td>
</tr>
<tr>
<td>Student work: teacher engaged</td>
<td>20-30</td>
<td>17.3</td>
<td>30.56</td>
<td>33.83</td>
</tr>
<tr>
<td>Student work: teacher not engaged</td>
<td>5-10</td>
<td>8.5</td>
<td>16.67</td>
<td>11.28</td>
</tr>
<tr>
<td>Complete disengagement</td>
<td>3-8</td>
<td>1.0</td>
<td>22.22</td>
<td>7.52</td>
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</tbody>
</table>
## High school 2

<table>
<thead>
<tr>
<th>Category Description</th>
<th>“Typical”</th>
<th>Highly effective</th>
<th>Data 1</th>
<th>Data 2</th>
<th>Data 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student active engaged learning</td>
<td>15-25</td>
<td>29.3</td>
<td>14.77</td>
<td>12.35</td>
<td>12.42</td>
</tr>
<tr>
<td>Student learning conversations</td>
<td>3-5</td>
<td>3.3</td>
<td>3.98</td>
<td>3.70</td>
<td>3.73</td>
</tr>
<tr>
<td>Teacher-led instruction</td>
<td>35-40</td>
<td>40.5</td>
<td>25.57</td>
<td>29.63</td>
<td>40.37</td>
</tr>
<tr>
<td>Student work: teacher engaged</td>
<td>20-30</td>
<td>17.3</td>
<td>34.09</td>
<td>36.42</td>
<td>34.78</td>
</tr>
<tr>
<td>Student work: teacher not engaged</td>
<td>5-10</td>
<td>8.5</td>
<td>5.68</td>
<td>5.56</td>
<td>4.97</td>
</tr>
<tr>
<td>Complete disengagement</td>
<td>3-8</td>
<td>1.0</td>
<td>15.91</td>
<td>12.35</td>
<td>3.73</td>
</tr>
</tbody>
</table>
### High school 3

<table>
<thead>
<tr>
<th>Category Description</th>
<th>“Typical”</th>
<th>Highly effective</th>
<th>Data 1</th>
<th>Data 2</th>
<th>Data 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student active engaged learning</td>
<td>15-25</td>
<td>29.3</td>
<td>5.64</td>
<td>17.29</td>
<td>18.92</td>
</tr>
<tr>
<td>Student learning conversations</td>
<td>3-5</td>
<td>3.3</td>
<td>0.51</td>
<td>7.52</td>
<td>9.91</td>
</tr>
<tr>
<td>Teacher-led instruction</td>
<td>35-40</td>
<td>40.5</td>
<td>21.03</td>
<td>18.05</td>
<td>23.42</td>
</tr>
<tr>
<td>Student work: teacher engaged</td>
<td>20-30</td>
<td>17.3</td>
<td>38.97</td>
<td>43.61</td>
<td>30.63</td>
</tr>
<tr>
<td>Student work: teacher not engaged</td>
<td>5-10</td>
<td>8.5</td>
<td>15.38</td>
<td>5.26</td>
<td>10.81</td>
</tr>
<tr>
<td>Complete disengagement</td>
<td>3-8</td>
<td>1.0</td>
<td>11.28</td>
<td>8.27</td>
<td>3.6</td>
</tr>
</tbody>
</table>
If I had an hour to solve a problem and my life depended on it, I would use the first 55 minutes determining the proper questions to ask.

Albert Einstein
Contact

Information on IPIs:
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IPI in your school:
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Professional learning enquiries:
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