Tasks, activities and student learning

Peter Goodyear

Centre for Research on Learning & Innovation
Sydney School of Education & Social Work

The University of Sydney
Overview

1. **Lightly supervised** student learning activities (as a space for research)
   
e.g. online; team-based project work; practical lab classes; internships

2. **Teaching-as-Design**
   
   Design as an indirect practice (‘indirection’ in design for learning)

3. **The task-activity distinction**

4. **Students’ interpretations of learning tasks: recent research**

5. **Implications for practice and research**
“.. if students are to learn desired outcomes in a reasonably effective manner, then the teacher's fundamental task is to get students to engage in learning activities that are likely to result in their achieving these outcomes ... it is helpful to remember that what the student does is actually more important in determining what is learned than what the teacher does.”

Tom Shuell (1986, p429)

This does not just apply to teaching (in a narrow sense) but to the whole (university) apparatus for curriculum reform, educational innovation, quality enhancement etc. Unless they affect what the student does (their activity) then they are of little or no consequence.
The shift towards ‘active learning’

From the sage on the stage to the guide on the side
The shift towards ‘active learning’

From the sage on the stage
to the guide on the side
& to teaching as design

Teaching as telling — Learning by listening

Teaching as facilitation — Learning by doing

Teaching as design

Relatively expensive; teaching costs proportional to student numbers

Lightly supervised

More attention to design

Design costs independent of student numbers
Increasing stress on traditional teaching practices

Diversifying student needs and expectations

Rising expectations about graduate capabilities

Teaching as Design

Intensification of pressures on teaching staff

Accelerating technological change

TaD to be understood as permeating the educational work, at all levels, not just solo teachers

Accumulating research evidence about learning and teaching
Activity-centred analysis and design (ACAD)

The task:activity distinction
Indirection in design

Learning Task → Learning Activity → Learning Outcomes

Connection through Affordance/Interpretation → Causal connection
The task:activity distinction

Indirection in design

“An essential concept is clearly shown here: the difference between the prescribed work (the task) and the real work (the activity) linked to the concrete difficulties of the situation, to their perception by the operator, to the strategies (s) he adopts to satisfy the demands of the work and, in particular, to the hazards. As Dejours (1993) wrote, one cannot avoid considering the creative aspect of any work activity. This is an intelligence of practice, a 'metis', the crafty intelligence already distinguished in ancient Greek vocabulary.” (Wisner, 1995a, 597)

“The plans are the instructions, the task and the work prescribed and the situated action is the real work.” (Wisner, 1995b, 1549)
Situated activity as a ‘meshwork’ of people and things, brought together in processes of co-configuration
e.g. Sun & Goodyear, 2019

#no_it Doesn’t look like a hamburger
The task:activity distinction

Indirection in design

“A learning design is a representation of what happens in a teaching and learning session to help learners achieve specified learning outcomes. It is often structured as a sequence of learning activities that can be shared with others. For online and blended learning, this approach is able to show, not only what is happening when the teacher is with the learners, but also what learners should be doing when the teacher is absent and they are being supported by technology.” (Laurillard et al., 2018, 1046)

This conflates what should happen with what is actually happening. We need to be able to keep design and analysis views distinct.
Students’ interpretations of learning tasks: research
(1) Beckman et al (2019)

- Online tasks; ‘open-ended’
- ‘Simple’ (not ‘multi-component’) tasks
- Tackled by students individually
- Data gathered from 45 students – working on 5 different tasks
- Pre- and post-task (activity) interviews with students & their teachers; LMS log files etc

- Focus on task interpretation and goal setting

- Researchers coded students’ interpretations for quality and depth/layers

**Quality**: how well it aligned with teacher’s description of the task (low, moderate, high)

**Layers**:
1. just what was explicit in task description
2. implicit requirements inferred
3. socio-contextual desiderata inferred (eg from knowledge of disciplinary norms)
Students’ interpretations of learning tasks: research
(1) Beckman et al (2019)

Quality: how well it aligned with teacher’s description of the task (low, moderate, high)

Layers:
1. just what was explicit in task description (e.g. wordcount; deadline; topic/content)
2. implicit requirements inferred
3. socio-contextual desiderata inferred (eg from knowledge of disciplinary norms)

Headline results
Quality: 13/45 students (11%) scored ‘high’; 27/45 ‘moderate’

Layers:
Only 8 students described the intended purpose of the task (implicit)
Only 2 mentioned application of disciplinary norms (socio-contextual)
38/45 only mentioned one layer – mostly explicit
Students’ interpretations of learning tasks: research
(1) Beckman et al (2019)

Implications (p12)

“Task understanding is not solely the responsibility of the student, but developed through an ongoing interaction between the teachers and students. Task design and communication may be particularly significant for tasks that are complex and are less familiar or less prescribed than traditional assignments ...

A second suggestion is to help teachers build their awareness of the explicit, implicit and socio-contextual features of the tasks they are designing. This framing may assist teachers to understand their own task well and enable them to better support their students by sharing these levels of interpretation with students”
### Students’ interpretations of learning tasks: research

(2) Forbes & Gedera (2019)

<table>
<thead>
<tr>
<th>Area of misunderstanding</th>
<th>Teacher intention</th>
<th>Student perception</th>
<th>Common ground</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence</td>
<td>Standing back to leave space</td>
<td>Absence</td>
<td>Standing by Signal presence</td>
</tr>
<tr>
<td>Formative/summative dimensions</td>
<td>Encourage participation</td>
<td>Compliance; attendance</td>
<td>Tutorial followed by secondary artefact</td>
</tr>
<tr>
<td>Language</td>
<td>Induction</td>
<td>Obstruction</td>
<td>Meta-language</td>
</tr>
<tr>
<td>Literature</td>
<td>Interpret, Critique</td>
<td>Compliance, quote</td>
<td>Paraphrase, model</td>
</tr>
</tbody>
</table>

9 courses (UoS)

<table>
<thead>
<tr>
<th>4 UG (1st-3rd yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 PG</td>
</tr>
<tr>
<td>1 PG/UG (exchange)</td>
</tr>
</tbody>
</table>

Human/social sciences

Social work
Education
Govt Policy
Pharmacy
Business management

3M 6F teachers

One assessed, collaborative (groupwork) task per course

*Credit: Kashmira Dave*
9 courses (UoS)

<table>
<thead>
<tr>
<th></th>
<th>TP</th>
<th>T1</th>
<th>IWR</th>
<th>FG</th>
<th>T2</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 UG (1st-3rd yr)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 PG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 PG/UG (exchange)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human/social sciences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Govt Policy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3M 6F teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One assessed,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>collaborative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(groupwork) task</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>per course</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TP Semi-structured pre-interview: familiarization with course, task identification and artefacts to be gathered

Asked the Teacher to provide an overview of the course and select a task from among those set for students – task had to be collaborative (groupwork); turned out always to be assessed.

Students mainly worked face-to-face on multi-component tasks (cf Beckman et al)

Plus gathered print copies of:

- The course (Unit of Study) outline
- The task specification (if separate from the UoS outline)
- Preliminary informaton sheet
- Any other relevant documents
T1 Semi-structured interview: main questions/prompts

1. What is the task?
2. What are the expected learning outcomes [for this task]?
3. How did you explain the rationale to students?
4. What was your rationale for the choice of the strategy /task?
5. What was your reason for choosing collaborative group work and your rationale behind the grouping strategy?
6. Any other comments

Outcomes: main influences upon design – ILOs then ideas about good teaching, level of course, student characteristics
IWR questions

Individual Written Responses: notes elicited from each student shortly before start of each focus group meeting.

1. What did your teacher ask you to do in the task?
2. Why do you think the teacher asked you to do this task?
3. How did the teacher organise the group for this activity?
4. Did the teacher explain why he/she wanted you to do this activity?
   a) If yes, what did she/he say?
   b) If no, do you think he/she should explain why you are doing this activity?
5. What did you learn from this task?

Note: the task:activity distinction wasn’t shared with students or staff involved in the study. The terms are used in everyday/interchangeable way.
Focus Group questions: as per IWR plus follow-up/prompt on other outcomes

1. What did your teacher ask you to do in the task?
2. Why do you think the teacher asked you to do this task?
3. How did the teacher organise the group for this activity?
4. Did the teacher explain why he/she wanted you to do this activity?
   a) If yes, what did she/he say?
   b) If no, do you think he/she should explain why you are doing this activity?
5. What did you learn from this task?
6. Prompt for other possible outcomes: e.g. enhancing academic writing skills, working in teams, communication skills, etc

Outcomes: differences between teachers’ intentions & students’ interpretations; complexity & explicitness of ILOs/goals
T2 Semi-structured interview

Each T2 interview started with a summary (by the researcher) of the students’ interpretation(s) of the task set.

The teacher then took the lead in identifying mismatches between their design intentions and the students’ interpretations of the task.

Follow-up questions used to explore

(a) the teacher’s views about the causes of any mismatches and
(b) what might be done to reduce such mismatches in the future. E.g. “why do you think students may have interpreted your design intentions like this?”

Outcomes: matches & mismatches – explicitness, complexity, teacher not feeling a need to explain rationale for task
Teachers’ intentions & students’ interpretations: matches and mismatches

<table>
<thead>
<tr>
<th>Case</th>
<th>Design elements</th>
<th>Match</th>
<th>Partial</th>
<th>Mismatch</th>
<th>Hidden</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>6</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>7</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>5</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>8</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>7</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>6</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>75</td>
<td>52</td>
<td>4</td>
<td>13</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Approx 1/3 design elements (mostly referring to ILOs) not a clear match
## Example mismatches

<table>
<thead>
<tr>
<th>Task design element/teacher intention</th>
<th>Student interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learn to interpret and synthesise information</td>
<td>Partial awareness of interpretation ILO; no awareness of synthesis ILO</td>
</tr>
<tr>
<td>Critically respond to other students’ ideas</td>
<td>Aware of need to respond; uneven awareness of need to be critical</td>
</tr>
<tr>
<td>Help students develop their teaching portfolio</td>
<td>Students not aware of alignment between marking rubric and Institute of Teachers’ requirements.</td>
</tr>
</tbody>
</table>
Factors likely to lead to good alignment between teachers’ intentions and students’ interpretations

Simple ILOs (Bloom) – below ‘create’ and ‘evaluate’

Explicitly stated ILOs
Pragmatic/professional vs pedagogic rationales

• Teachers spoke more about the *how* than the *why* of tasks
• Rationales often referred to the relationship between a task and valued practices in the profession or discipline:
  “I’m asking them to do this, because as an accountant they would have to do (a version of) this”
• Rationales rarely, if ever, explained how the task could be expected to help students develop a specific capability (etc) – or what else students would need to do to develop that capability. In other words, tasks rarely had an explicit pedagogical justification.
Parallels with earlier SAL research

• Long tradition of research on students’ approaches to learning (SAL)
• Students’ (self-reported) approaches to learning (deep, surface, strategic/achieving etc) as rationalisations of habits/practices of task interpretation?
• SAL online and face-to-face (F2F) - Ellis & Goodyear (2010).
• Rather few students take ‘deep’ approaches
• But NB we can’t infer that all teacher intentions are meant to evoke deep approaches

Case Based Learning in Vet. Sci. (online & face-to-face)

<table>
<thead>
<tr>
<th>Approaches to case-based learning</th>
<th>Conceptions of case-based learning</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fragmented</td>
<td>Cohesive</td>
</tr>
<tr>
<td>Face-to-face</td>
<td>Categories A&amp;B</td>
<td>Categories C&amp;D</td>
</tr>
<tr>
<td>Surface</td>
<td>56</td>
<td>44</td>
</tr>
<tr>
<td>Deep</td>
<td>5</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
<td>72</td>
</tr>
<tr>
<td>Online</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface</td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td>Deep</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>61</td>
<td>72</td>
</tr>
</tbody>
</table>

F2F 25% taking a ‘deep’ approach to the task

Online 11% taking a ‘deep’ approach to the task

Face-to-face: $\chi^2 = 16.7$, phi = .35, $p < .001$
Online: $\chi^2 = 7.2$, phi = .23, $p < .01$
Source: Ellis, Marcus, & Taylor; 2006
PBL in Pharmacy (online & face-to-face)

Table 5.4 Associations amongst the Different Categories of Approaches to PBL in Pharmacy

<table>
<thead>
<tr>
<th>Face-to-face approaches</th>
<th>Deep (A)</th>
<th>Achieving (B)</th>
<th>Surface (C,D,E)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online approaches</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deep (A)</td>
<td>14</td>
<td>2</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Achieving (B)</td>
<td>0</td>
<td>7</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Surface (C,D,E)</td>
<td>12</td>
<td>22</td>
<td>102</td>
<td>136</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>31</td>
<td>109</td>
<td>166</td>
</tr>
</tbody>
</table>

Online: $\chi^2 = 70.1$, Cramer’s phi = .65, $p < .001$

F2F
16% taking a ‘deep’ approach to the task

Online
11% taking a ‘deep’ approach to the task
Learning through discussions in Social Work

<table>
<thead>
<tr>
<th>Conceptions of learning through discussions</th>
<th>Approaches</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Surface approaches Categories C,D</td>
<td>Deep approaches Categories A&amp;B</td>
<td>Totals</td>
<td></td>
</tr>
<tr>
<td>Face-to-Face</td>
<td>26</td>
<td>0</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cohesive (A,B)</td>
<td>16</td>
<td>9</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
<td>9</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Fragmented (C,D)</td>
<td>26</td>
<td>0</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Online</td>
<td>9</td>
<td>16</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>16</td>
<td>51</td>
<td></td>
</tr>
</tbody>
</table>

Face-to-face: $\chi^2 = 11.4, \phi = .47, p < 0.001$

Online: $\chi^2 = 24.2, \phi = .69, p < 0.001$

Source: Ellis Goodyear, Prosser, & O’Hara, 2006

F2F 18% taking a ‘deep’ approach to the task

Online 31% taking a ‘deep’ approach to the task
Implications for **practice** and research

There is no direct connection between a tool (or any other physical-digital design element) and learning outcomes.

What the student does (activity mediates)

Taking notes or posting to Facebook?
Implications for practice and research

Connecting the macro to the micro

Macro-level curriculum reforms, e.g. to promote new graduate outcomes, depend for success on accurate task interpretations
Implications for **practice** and research

The semantic turn in design; design as invitation

Students as partners

- Students taking a mandate & ‘tooling up’ to explain how they do what they do and why
- Students knowledgeably configuring their own epistemic environments

If we can’t afford a design ethnographer in every learning situation ...

.. a successful design affords the meanings of all those stakeholders who can move an artifact through its lifecycle, making it part of a social process ... In the end, what an artifact becomes is what its network of stakeholders makes it to be ..

Krippendorff (2006, 186)
Implications for practice and research

Implementation fidelity

E.g. educational designs (etc) that work well ‘in the lab’ or in tightly supervised situations, but which don’t demonstrate same results outside the lab or in lightly supervised situations.

Meta-analyses and systematic reviews

Few systematic reviews demonstrate clear, unequivocal benefits

High discard rates. Lots of studies that appear to involve the design of interest turn out (on closer inspection) not to do so.

Student agency means the designed task ≠ actual activity
Thank you

Follow up resources

https://petergoodyear.net

Sydney Business School ACAD video (3 mins)
https://player.vimeo.com/video/302378219

HERD Review paper on Teaching as Design