The value of peers and support from scaffolding: Applying constructivist principles to the teaching of psychology

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“Even while they teach, men learn”

(Seneca, 4BC-65AD, Moral Epistles)
Constructivist epistemology
Piaget

- Peer facilitation effects and sociocognitive conflict

“Peers...provide the ideal potential source of sociocognitive conflict necessary for development to take place “
(Davis & Winstone, 2011)

Vygotsky

- Scaffolding and the Zone of Proximal Development

Potential level

ZPD: traversed through scaffolding

Actual level
Our aims

• Embed constructivist principles into teaching and assessment activities

• 2 key principles:
  – Learning activities should involve problems for learners to solve
  – Learning is essentially social in nature
Case study 1: Scaffolding in academic tutorials

• Level HE1
  – Essay writing
  – Citation and referencing
  – Critical thinking
  – Research report writing
  – Reading journal papers
  – Presentation skills
Case study 1: Scaffolding in academic tutorials

Component t-test results

<table>
<thead>
<tr>
<th>Component</th>
<th>t-test results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>$t(117) = 3.42$, $p = .001$, $d = 0.54$</td>
</tr>
<tr>
<td>Techniques</td>
<td>$t(118) = 5.55$, $p &lt; .001$, $d = 0.87$</td>
</tr>
<tr>
<td>Group size</td>
<td>$t(120) = 4.44$, $p &lt; .001$, $d = 0.60$</td>
</tr>
<tr>
<td>Group work</td>
<td>$t(123) = 3.53$, $p = .001$, $d = 0.62$</td>
</tr>
<tr>
<td>Discussions</td>
<td>$t(123) = 4.19$, $p &lt; .001$, $d = 0.75$</td>
</tr>
<tr>
<td>Exercises</td>
<td>$t(123) = 4.01$, $p &lt; .001$, $d = 0.71$</td>
</tr>
<tr>
<td>Handouts</td>
<td>$t(123) = 3.45$, $p = .001$, $d = 0.61$</td>
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</tbody>
</table>
Case study 1: Scaffolding in academic tutorials

Cohort X essay grade interaction:

\[ F(1, 235) = 5.30, \ p = .02, \ \eta^2_p = .02 \]
Case study 2: Sociocognitive conflict in statistics

Test of Homogeneity of Variances

<table>
<thead>
<tr>
<th>stress level</th>
<th>Levene Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.375</td>
<td>2</td>
<td>27</td>
<td>.690</td>
</tr>
</tbody>
</table>

STEP 1

- Red circles = heterogeneity
- Green circles = homogeneity
Case study 2:
Sociocognitive conflict in statistics

STEP 2

STEP 3

= heterogeneity
= homogeneity
Case study 2:
Sociocognitive conflict in statistics

Group:
$F(1, 36) = 14.27, p < .001, \eta^2_p = .28$

Time:
$F(1, 36) = 111.08, p < .001, \eta^2_p = .76$

Group x Time:
$F(1, 36) = 4.35, p = .04, \eta^2_p = .11$
Discussion

The legacy of HE

Scaffolding: “...[the approach used in tutorials] builds your confidence, because you’re the one helping yourself to improve, rather than someone else doing it for you. It’s like the proverb about either giving a man a fish or teaching a man to fish. Rather than telling me things, you’ve given me the skills to go and teach them to myself”

(Student from scaffolding cohort)
Future directions

- Find ways of helping students to reflect on the importance of sociocognitive conflict

- Socialise students into this more independent approach from the start of the degree

- Chart the long-term effects of these approaches over the course of the degree
Thank You
New approaches to demystifying insight

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After a person has become stuck on a problem, they sometimes achieve a clear and sudden solution through insight—the so-called Aha! experience. Because of its distinctive experience, the origins and characteristics of insight have received considerable attention historically in psychology. However, despite progress, many questions remain about the complex processes involved in insight.

What is insight? The term ‘insight’ is used to designate the clear and sudden understanding of how to solve a problem. Insight is thought to arise when a solver breaks free of unwarranted assumptions, or forms novel, task-related connections between pre-existing concepts or skills.

What are the aims of Bowden et al.’s new framework for investigating insight?

Introduction
Almost everyone has had the ‘Aha!’ experience when solving a problem. After working for some time on a vexing problem, the solution comes in a sudden and unexpected flash. Insight is particularly important in complex problems, with paradigms common in other domains of cognitive science. We describe a large set of mini-insight problems to which multiple methods can be applied, together with subjective reports to identify insight problem-solving. Behavioral priming and neuroimaging methods are providing evidence about what, where, and how neural activity occurs during insight.

What is problematic about the small number of problems typically used in experiments?

complex problems, with paradigm common in other domains of cognitive science. We describe a large set of mini-insight problems to which multiple methods can be applied, together with subjective reports to identify insight problem-solving. Behavioral priming and neuroimaging methods are providing evidence about what, where, and how neural activity occurs during insight.

What point that the authors are making does the ‘sock problem’ on page 323 demonstrate?

Solving the sock problem involves selecting a new perspective to form a novel insight. This problem exemplifies the role of meta-cognition in insight, as the solver must recognize the necessity of switching perspectives to achieve a solution. The sock problem also highlights the importance of procedural knowledge in insight, as the solver must have a mental representation of the problem to identify the need for a new approach.