Introduction

FOCUS

Information Problem Solving (IPS)

... entails processes that involve locating, selecting, evaluating, and integrating information from various sources and is initiated to fulfill an information need.

PREVIOUS RESEARCH


THIS STUDY

Is the Four-Component Instructional Design Model (4C/ID-model) suitable to design good quality (i.e. effective and efficient) IPS-instruction?
Introduction

QUESTIONS

• RQ1: How do teachers perceive the quality of the course?
• RQ2: Does perceived quality differ between teachers and students?
• RQ3: What are important S-W-O-Ts of the course that relate to quality?

Overview

• Introduction
• Method
• Results
• Discussion

Method

• Participants
  – 7 university teachers; PhD; 4 male
  – $M_{age} = 41.9$ ($SD = 8.7$)
  – supervised students: $M = 45.9$ ($SD = 24.7$; $Mdn = 55$)
  – IL-expertise (1 to 10): $M = 8.1$ ($SD = 1.6$)
  – ID-expertise (1 to 10): $M = 6.3$ ($SD = 2.6$)
  – 4C-ID-expertise (1 to 10): $M = 6.0$ ($SD = 2.6$)

• Materials
  – 4.3 EC Course (120 hours)
  – SEIN (Student Evaluation Instrument; OU)
  – SWOT questionnaire (Strengths, Weaknesses, Opportunities, Threats)

• Procedure
  – Data collection:
    • administration SEIN and SWOT questionnaires
  – Data analysis:
    • SEIN: (non-parametric) descriptive statistics using SPSS
    • SWOT: thematic open coding procedure (Romero-Gutierrez et al., 2016)
Method MATERIALS: COURSE

- Whole task approach
- Completion strategy
- Backward fading

Results SEIN (RQ1)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Mode</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Teacher</td>
<td>Teacher</td>
<td></td>
</tr>
<tr>
<td>Course overall</td>
<td>6.9 (0.9)</td>
<td>6</td>
<td>0.4</td>
</tr>
<tr>
<td>Learning tasks</td>
<td>6.7 (1.3)</td>
<td>7</td>
<td>-0.7</td>
</tr>
<tr>
<td>Assessment task</td>
<td>7.0 (1.0)</td>
<td>7</td>
<td>-1.4</td>
</tr>
<tr>
<td>Supportive info</td>
<td>6.4 (1.1)</td>
<td>7</td>
<td>-0.2</td>
</tr>
<tr>
<td>Teacher support</td>
<td>6.7 (1.4)</td>
<td>8</td>
<td>-0.4</td>
</tr>
<tr>
<td>DLWE (OpenU)</td>
<td>7.1 (0.4)</td>
<td>7</td>
<td>2.6</td>
</tr>
<tr>
<td>Forum</td>
<td>5.4 (2.3)</td>
<td>6</td>
<td>-1.3</td>
</tr>
</tbody>
</table>

Results SEIN (RQ1)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agreement on statement (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical level of the course is adequate</td>
<td>100</td>
</tr>
<tr>
<td>Scientific level of the course is adequate</td>
<td>100</td>
</tr>
<tr>
<td>Course is challenging</td>
<td>100</td>
</tr>
<tr>
<td>Learning goals are met</td>
<td>100</td>
</tr>
</tbody>
</table>

Overview

- Introduction
- Method
- Results
- Discussion
Results SEIN (RQ2)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Mode</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Teacher</td>
<td>Student</td>
<td>Teacher</td>
</tr>
<tr>
<td>Course overall</td>
<td>6.9 (0.9)</td>
<td>7.4 (0.9)</td>
<td>6</td>
</tr>
<tr>
<td>Learning tasks</td>
<td>7.0 (1.0)</td>
<td>7.6 (1.0)</td>
<td>7</td>
</tr>
<tr>
<td>Supportive info</td>
<td>6.4 (1.1)</td>
<td>7.1 (1.1)</td>
<td>7</td>
</tr>
<tr>
<td>Teacher support</td>
<td>6.7 (1.4)</td>
<td>7.9 (1.3)</td>
<td>7</td>
</tr>
<tr>
<td>DLWE (OpenU)</td>
<td>7.1 (1.4)</td>
<td>7.4 (0.9)</td>
<td>7</td>
</tr>
<tr>
<td>Forum</td>
<td>6.4 (2.3)</td>
<td>6.2 (1.5)</td>
<td>6</td>
</tr>
</tbody>
</table>

The students rated teacher support more highly (Mdn=8) than teachers (Mdn=7), U=90.5, p=0.045, r= -0.27.

Results SEIN (RQ2)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agreement on statement (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical level of the course is adequate</td>
<td>Teachers</td>
</tr>
<tr>
<td>Scientific level of the course is adequate</td>
<td>100</td>
</tr>
<tr>
<td>Course is challenging</td>
<td>100</td>
</tr>
<tr>
<td>Learning goals are met</td>
<td>100</td>
</tr>
</tbody>
</table>

Results SWOT (RQ3)

N=63 statements:
- 16 strengths >> 4 themes
- 24 weaknesses >> 4 themes
- 11 opportunities >> 3 themes
- 12 threats >> 3 themes

Strengths (16) Main Themes:
- Whole task approach. Students learn the complex skill by solving authentic “whole-task” problems.
- Selfdirecting. Gradually decreasing instructional support and guidance and increasing self-activation.
- Guidance. The learning process is guided by partially completed process work sheets.
- Feedback. Students receive extensive cognitive feedback on task performance after the fourth learning task.

Weaknesses (24) Main Themes:
- Construction alignment. No perfect alignment between learning goals, content, and assessment.
- Curriculum coherence. Skills like reading and writing (academic) texts are wrongly considered prior knowledge.
- Materials update. Adapting course materials can be costly and labor intensive when specialist skills are lacking.
- Feedback. Cognitive feedback on the fourth task is labor intensive.

Opportunities (11) Main Themes:
- IL skills education. Course might be a starting point for the development of a learning-teaching trajectory for learning (academic) IL skills.
- Academic skills education. Integrating (academic) IL skills into a broad academic skills curriculum.
- Collaborative learning. To improve learning and to address problems related to scalability CSG formats could be implemented.

Threats (12) Main Themes:
- Plagiarism. The open nature of the course makes it possible to exchange and copy student work.
- Scalability. An increase of students might hamper adequate teacher support (e.g., providing feedback).
- Curriculum coherence. Autonomy of teacher teams may result in poorly aligned curricula.

Overview
- Introduction
- Method
- Results
- Discussion
Discussion

- 4C/ID-model is most suitable to design good quality instruction (as perceived by teachers and students)
- Allocate sufficient time to develop, implement, and maintain instruction in order to prevent constructive misalignment

Discussion FUTURE RESEARCH

- Scaling up:
  - Pretest-Posttest Control Group Design Formats
  - Longitudinal designs
  - Multiple case studies

Questions

iwan.wopereis@ou.nl