The Flipped Information Literacy Classroom: lessons learned

IVIG 2016 - Prague

Harrie van der Meer
Librarian / Project Manager

Loes Kors
Subject Librarian
Program:

What is Flipped Classroom?

Why Flipped Information Literacy Classes?

How to design Flipped Information Literacy Classes?

- Learning Teaching Trajectories
- TPACK model
- Online materials at UOAS library

Effectiveness of Flipped Classroom: research

Opportunities and limitations for libraries: our experiences so far
What is flipped classroom?
Learning methods

WHAT IS FLIPPED CLASSROOM?
The differences between the models are mainly about the ratio between online or face to face learning modalities.

Blended Learning models (Clayton Christensen)

1. Rotation model
   - Station Rotation
   - Lab Rotation

2. Flex model

3. A La Carte model

4. Enriched Virtual model

A combination of online and face to face learning

The way of rotation is different!

Flipped Classroom

(online learning, small group instruction, assignments, class discussions etc.)
WHAT IS FLIPPED CLASSROOM?
Instead of only:
students instruct themselves before class
and practice and do social activities in class
Why Flipped Information Literacy Classes?
To be more Effective
To be more Efficient
To be more Interesting
To be more effective
Is it more effective?

⇒ AUAS research
To be more Efficient

TIME
OUR MOST PRECIOUS RESOURCE
Why more efficient?

- Many students, limited amount of instructors
- The way we work (for effectivity reasons)

- Workshops instead of lectures
- Embedded within research skills
- Embedded within projects
- Multiple learning moments
Is it more efficient?

- Creating online materials will cost time
- Reducing duration of instructions will save time

So it depends on:

- Reusability of online materials
- Number of instructions in which the materials can be used
- Reduction time of instructions
To be more interesting.
To be more Interesting
Can you make it interesting?

Important to evaluate!
How to design Flipped Information Literacy Classes?

Learning Teaching Trajectories
TPACK model
Online materials at UOAS library
Flipped Classroom is a method of teaching not a goal in itself

It starts with instructional design
Effective teaching: Constructive alignment

Source: Biggs & Tang, 2011
Design of Flipped Classroom: 3 steps

**STEP 1**  DEFINE YOUR OBJECTIVES

**STEP 2**  DETERMINE ASSESSMENT METHOD

**STEP 3**  SELECT DELIVERY METHOD / MEDIA
Design of Flipped Classroom: 3 steps

**STEP 1** DEFINE YOUR OBJECTIVES

- Be aware of your audience (level / preknowledge etc.)
- Align with the program
  
  - The project/educational program
  - The multiple learning moments of the Information Literacy program

**STEP 2** DETERMINE ASSESSMENT METHOD

**STEP 3** SELECT DELIVERY METHOD / MEDIA
Design of Flipped Classroom: 3 steps

**STEP 1**
DEFINE YOUR OBJECTIVES

**STEP 2**
DETERMINE ASSESSMENT METHOD

- Assessment method influences the way it can be taught and the way it can be delivered
- Notice: Assessment of information literacy mostly done implicitly by teachers (in case there is assessment)

**STEP 3**
SELECT DELIVERY METHOD / MEDIA
Design of Flipped Classroom: 3 steps

STEP 1  DEFINE YOUR OBJECTIVES

STEP 2  DETERMINE ASSESSMENT METHOD

STEP 3  SELECT DELIVERY METHOD / MEDIA

• What will be necessary to obtain your goal?
  • Collaboration?
  • Interaction?
  • Feedback?
  • Discussion?
  • Etc.………………………
How to design Flipped Information Literacy Classes?

Learning Teaching Trajectories
TPACK model
Online materials at UOAS library
In order to align:

- Our different Information Literacy moments during a study period
- Our Information Literacy programs with the educational program / projects of students
- The online and face-to-face moments within a program

We increasingly describe our programs as Learning Teaching Trajectories
Definition learning-teaching trajectory

“A learning-teaching trajectory is a reasoned building of interim goals and content, leading to a final goal. Depending on precise function, context of use and target group, learning-teaching trajectories vary in the degree in which implications for different elements of the curriculum were worked out. (Strijker, 2010, p. 10).”
A good Learning-teaching trajectory

- Should have more - tuned - learning moments
- Should be integrated within the educational program
- Should build up in complexity
- Should be made explicit: write it down!

- Tip: Use Information Literacy standards
Why using a learning-teaching trajectory?

- It will make clear who is doing what in the best possible way on what moment during the study period F.E.:
  - Which parts will be done by librarian and teacher?
  - How will technology be integrated?
- The quality of Information Literacy education is expected to improve etc.
### Leerlijn Informatievaardigheden OTM

#### 1e jaars Propedeuse

<table>
<thead>
<tr>
<th>Blok 1</th>
<th>Wat</th>
<th>Doelstelling</th>
<th>Inhoud/Highlight</th>
<th>Vorm</th>
<th>Wie</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Introductie</td>
<td>Uitleg van de basis mediatheekvoorzieningen</td>
<td>Gebruik van de mediatheek</td>
<td>20 min</td>
<td>Info spec</td>
</tr>
<tr>
<td></td>
<td>HIT</td>
<td>Basisintroductie informatievoorziening</td>
<td>Toets</td>
<td>Zelfstudie</td>
<td></td>
</tr>
</tbody>
</table>
| Blok 2 | Project-instructie/Workshop * | Beroepsgerelateerde klachten bij bouwvakkers | • Student leert zoekplan maken op eenvoudig niveau  
• Student doet eenvoudige zoekacties in databanken  
• Booleaanse operatoren  
• Student weet van bronvermelding (APA)  
• Student is in staat op eenvoudig niveau gebruik te maken van streaming media | • Basisstappen in zoekproces  
• verzamelen van kennis  
• kennis delen  
• multi media  
• Eenvoudige zoekopdracht in de databanken Al, Academia, BSL, DocOnline en PiCarta | 2 les uur workshop  
(45 min pres+ 50 min opdrachten) | Info spec |
| Blok 3 | Project-instructie/Workshop * | Zoeken naar informatie: Vet Cool! | • Formuleren van een zoekvraag volgens de PICO-methode  
• Tips om snel en gericht te zoeken  
• Uitleg twee databanken | PubMed en LexisNexis | Info spec |

#### 2de jaars

| Blok 1 | Project-instructie/Workshop * | Zoeken naar evidence-based literatuur PubMed | • Student leert PICO methode  
• Student leert te werken volgens de EBP  
• Student leert 1 databank grondig kennen  
• Schriftelijke rapportage zoekactie | specifieke databank  
• selectie, kritisch lezen en evaluatie resultaten | 2 uur workshop  
(450 min pres+ 50 min opdrachten) | Info spec |
|        | Project-instructie/Workshop * | Zoeken naar evidence-based literatuur PubMed | • Student leert 1 databank grondig kennen  
• Schriftelijke rapportage zoekactie | specifieke databank  
• selectie, kritisch lezen en evaluatie resultaten | 2 uur workshop  
(50 min pres+ 50 min opdrachten) | Info spec |
Elements that could be described:

Year X, Semester Y

**Vision** (problem/wish/improvement)  What should be improved?
**Learning goals**  Where to? [connection to IL standards]
**Content**  What do they learn?
**Result** [product/paper etc.]  What should be delivered?
**Teaching method**  What teaching methods will be used?
**Technology** (in general)  How to use technology?

**Level + prescience**  What is the level of the target group? Which relevant prescience is demanded?
**Testing**  How will students be tested?
**Casting student support**  Who will teach? (subject librarian or teacher)

**Implementation of a lesson**  What will happen where and wenn?

<table>
<thead>
<tr>
<th>Time</th>
<th>Content</th>
<th>Learning activity</th>
<th>Technology</th>
<th>Materials/ sources</th>
<th>Teaching activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BEFORE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 min</td>
<td>What does the student learn?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 min</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LESSON</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13:00-13:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13:30–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AFTER</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 min</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Roadmap for implementation:

**STEP 1**  CHECK WHAT ALREADY HAS BEEN DONE

**STEP 2**  CHECK THE ORGANISATION STRUCTURE OF THE SCHOOLS

**STEP 3**  MAKE CONTACT AND DETERMINE THE NEEDS

**STEP 4**  MAKE A DESIGN OF THE LEARNING-TEACHING TRAJECTORY

**STEP 5**  PLAN THE IMPLEMENTATION

**STEP 6**  EVALUATE THE LEARNING-TEACHING TRAJECTORY
How to design Flipped Information Literacy Classes?

Learning Teaching Trajectories
TPACK model
Online materials at UOAS library
TPACK Model

It's about:

- Reinforcing education by technology

- Integrated knowledge of:
  - Technology
  - Pedagogy
  - Content
TPACK Model: content knowledge

- Knowledge of a subject area
  - mathematics
  - biology
  - history
  - Etc.
- Information literacy
- Concepts, theories, skills, procedures etc.

- Knowledge of a subject area
  - Knowledge of a subject area
    - Biology
    - Mathematics
    - History
    - Etc.
TPACK Model: pedagogical knowledge

- methods of teaching
  (transfering the knowledge)

  The way of using educational tools

  Preparing lessons

  Student assessment

  Etc.
TPACK Model: technological knowledge

Technology must be supportive!

- internet
- online courses
- video
- software
- applications
- school board
- Etc.
TPACK Model: PCK

- How to teach specific content?
TPACK Model: TPK

- Implementing technology, tools and media in the way you teach
- Technology ↔ Didactics

Learning analytics
discussion boards
digitale voting
TPACK Model: TCK

- Technology should support transfer of knowledge
- Technology ⇔ Content

E.g.
- Information Literacy [→]
  Card indexes → database search
- Media Studies [→]
  Use of 3D printers

[←] Writing of papers
  Web versus paper: different needs
TPACK Model: TCK

= context circle

Be aware of:

e.g. Target group

School / organisation

Infrastructure

Surrounding
<table>
<thead>
<tr>
<th>Time Frame</th>
<th>Before the Class</th>
<th>During the Class</th>
<th>During the Class</th>
<th>During the Class</th>
<th>After Class</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content or Issue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What content will be discussed?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Learning Activities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What will the student do with the content?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How to use which technology?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Toolbox</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which materials and sources do you use?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Teaching Activities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What do you do to support learning activities of your students?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How to design Flipped Information Literacy Classes?

Learning Teaching Trajectories
TPACK model
Online materials at UOAS library
Online course (link)
29 Student to student video’s (link)
Captivate module (link)

Workshop Informatievaardighheid

Faculteit Business en Economie

CE - Digitale Marketing Jaar 2

September 2016
## Different ways of using online content

<table>
<thead>
<tr>
<th>Preparation student</th>
<th>Workshop</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 videos (15 min)</td>
<td>Quiz at the start</td>
</tr>
<tr>
<td></td>
<td>Short summary of theory</td>
</tr>
<tr>
<td></td>
<td>Practising and coaching</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preparation student</th>
<th>Workshop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online IL course (45 min)</td>
<td>Exercises</td>
</tr>
<tr>
<td>Videos (15 min)</td>
<td>Screencasts with the answers</td>
</tr>
<tr>
<td>Test (15 min)</td>
<td>(during and after the workshop)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preparation student</th>
<th>Workshop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Captivate module (45 min)</td>
<td>Discussion</td>
</tr>
<tr>
<td>(with assignment to fill in logbook)</td>
<td>Exercises</td>
</tr>
</tbody>
</table>
Platform for delivery - mainly our LMS

WERKOMGEVING INFORMATIEVAARDIGHEDEN CE DIGITAL MARKETING

Deze werkomgeving is bedoeld voor het vak Informatievaardigheden als onderdeel van het project "Online contentmarketing op basis van storytelling". Deze site bevat een verplichte module die je moet doen ter voorbereiding van de les (zie links). Zonder het doen van deze module kan de les niet worden gevolgd.

Wat kun je verwachten?

De module bevat een aantal korte filmpjes afgewisseld met quizjes, een opdracht en een korte toelichting.

Tijdsbesteding:

De module neemt ongeveer 50 minuten in beslag.

LINKS

- Module Informatievaardigheid
- Evaluatieformulier (na de les)
- Nieuwe koppeling toevoegen

GEDEELDE DOCUMENTEN

<table>
<thead>
<tr>
<th>Type</th>
<th>Naam</th>
<th>Gewijzigd</th>
<th>Gewijzigd door</th>
</tr>
</thead>
<tbody>
<tr>
<td>📚</td>
<td>Blokboek Digital Marketing 2016-2017</td>
<td>7-9-2016 20:11</td>
<td>Harrie van der Meer</td>
</tr>
</tbody>
</table>

AGENDA
Effectiveness of Flipped Classroom

Research september 2015
Research september 2016
Our goals:

To find out which method is more effective: flipped classroom or traditional workshop (within our situation)

To improve our information literacy courses

effectiveness

efficiency
Effectiveness of Flipped Classroom

Research september 2015
Research september 2016
Research design

Two groups:
- Blended Learning group (111 students)
- Face to face group (73 students)

Identical study load

Effectiveness measurement of knowledge

Evaluation of student perception
Set up instructions (75 minutes)

**Pre-instruction**
- **1 to 5 minutes:** 5 videos
- **5 to 20 minutes:** Theory – short review
- **20 to 75 minutes:** Practising - assignment
- **75 minutes:** Test - 5 questions

**Post-instruction**
- **75 minutes:** Evaluation - 5 questions

**Face to face group**
- Set up instructions (75 minutes)

**Blended Learning group**
- Set up instructions (75 minutes)
Effectiveness

Average

F2F: 78.63
BL: 76.76

Percentage Correct per question

- Question 1
- Question 2
- Question 3
- Question 4
- Question 5

F2F  BL
Evaluation

Grades for overall workshop in %

Average

F2F (2015): 6.9
BL (2015): 6.1
BL (2014): 7.3
Conclusions research 2015

**Effectiveness:**
There was no difference in the overall test scores between the BL and the F2F group

**Evaluation:**
The evaluation of the overall workshop is significantly lower for the BL group compared with the F2F group (P<0.01)

**Reflexion on research:**
- Group sizes should be equal (that wasn’t the case)
- Information Literacy is more than knowledge: skills should be measured as well
Effectiveness of Flipped Classroom

Research september 2015
Research september 2016
Research design

Two groups: (2x2)
- Blended Learning group (50 students)
- Face to face group (50 students)

Identical study load

Test $\Rightarrow$ effectiveness measurement of knowledge

Scoring Rubric $\Rightarrow$ effectiveness measurement of skills

Evaluation form $\Rightarrow$ evaluation of perception of students
Set up instructions
(100 minutes)
Objectives ⇒ testing and delivery method

Design of Flipped Classroom: 3 steps

STEP 1  DEFINE YOUR OBJECTIVES
STEP 2  DETERMINE ASSESSMENT METHOD
STEP 3  SELECT DELIVERY METHOD / MEDIA

Using:

- Information Literacy Standards (ACRL)
- Bloom’s taxonomy: to decide in what way should be tested and delivered
Bloom’s taxonomy

- **REMEMBERING**: Recalling relevant knowledge from long term memory.
- **UNDERSTANDING**: Making sense of what you have learnt.
- **APPLYING**: Use the knowledge gained in new ways.
- **ANALYSING**: Breaking the concept into parts and understand how each part is related to one another.
- **EVALUATING**: Making judgements based on a set of guidelines.
- **CREATING**: Putting information together in an innovative way.

Deep level learning

Increase knowledge
## Potential learning goals (objectives)

<table>
<thead>
<tr>
<th>Potential learning goals (objectives)</th>
<th>Part of program?</th>
<th>Taxonomy Bloom</th>
<th>FC: before or in class</th>
<th>Availability of educational materials</th>
<th>Ways of testing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACRL old + framework</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Zoektermen bedenken] De student kan voor iedere term variënte bedenken (synoniemen, antoniemen, vertalingen, vaktermen,)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Video</td>
<td>x</td>
</tr>
<tr>
<td>[Zoektermen bedenken] De student is zich bewust van de mogelijkheid dat hij verschillende talen moet hanteren [STIP 1]</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Search terms</td>
<td></td>
</tr>
<tr>
<td>[Aard informatie] De student kan beoordelen welk type informatiebron hij moet gebruiken voor een bepaald type vraag. [STIP 1]</td>
<td>x</td>
<td>x</td>
<td>?</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>[Aard informatie] De student realiseert zich dat bronnen van informatie sterk kunnen variëren in inhoud, vorm, relevantie en waarde, afhankelijk van de behoefte en aard van de zoekactie. [STIP 2]</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>[Specifieke bronnen] De student kent een aantal internetbronnen en databanken voor zijn vakgebied [STIP 1]</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>[Toegang] De student weet hoe je toegang tot de internetbronnen en databanken krijgt en hoe je ze kan vinden. [STIP 1]</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Libr vs int</td>
<td></td>
</tr>
<tr>
<td>[Toegang] De student weet hoe hij vakspecifieke databanken kan filteren [STIP 1]</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Libr vs int</td>
<td></td>
</tr>
<tr>
<td>[Algemeen] De student kan eenvoudige zoekmethoden en -technieken [STIP 1]</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Search terms</td>
<td>x</td>
</tr>
<tr>
<td>[Algemeen] De student kan eenvoudige zoekmethoden en -technieken [STIP 1]</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Search terms</td>
<td>x</td>
</tr>
</tbody>
</table>
Scoring Rubric

- A scoring tool for qualitative rating of authentic or complex student work
- Used rubric developed by Jos van Helvoort
- Rating project reports of students + logbook

---

### Scoring Rubric for Information Literacy

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Professional behaviour</th>
<th>Insufficient behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Orientation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ The student product makes clear that the student did a good orientation on the topic and that he/she formulated his/her own focus on the topic or research question. This is also expressed by the fact that the student formulated one or more good research questions.</td>
<td>□ The student product makes clear that the student used the question as it was originally formulated in the assignment or student task. The student him/herself did not further explore the question as such. An example of this behaviour is that the student did not define the core key terms and that these terms are supposed to be clear while they are at least multi interpretable.</td>
</tr>
</tbody>
</table>

Score: | 0 very good | 0 good | 0 sufficient | 0 poor | 0 bad | 0 very bad | Grade 1-20= |

---

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Professional behaviour</th>
<th>Insufficient behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ The student product has a reference list that is complete and the citation style is used correctly.</td>
<td>□ There is no reference list in the student product and / or The reference list is not complete (documents that are cited in the text are not included in the reference list).</td>
</tr>
</tbody>
</table>

Grade 1-10= |
Results

Hopefully they will be presented at:

European Conference on Information Literacy (ECIL)
Prague, Czech Republic
10-13 October 2016
Opportunities and limitations for libraries: experiences
Opportunities for libraries

• Rethink the way students learn and the way we teach

• Improve our Information Literacy programs:
  • more alignment with programs
  • using technology
  • better (online) materials

• Efficiency: being able to do more in less time
Limitations for libraries

• Library instructors can’t assign homework to students

• Library instructors can’t assess students (summative)

• A limitation in (online) possibilities (f.e. interaction, motivation) because we don’t see them on a regular base

• Constraints within the organisation (contact hours, available technology and support etc.)
A few last tips:

- cooperate with teachers and policy makers
  - planning and homework
  - content: workshops within educational programs

- cooperate with the educationalists

- make sure that teachers, policy makers and students are willing to participate

- take care of internal organisation and training

- start with instructional design and align align align
Ready to flip? 😊
Harrie van der Meer
Librarian / Project Manager
Email: h.a.l.van.der.meer@hva.nl
Tel: +31 6 290 75 998

Loes Kors
Subject librarian
Email: l.kors-smit@hva.nl

Website:
http://www.amsterdamuas.com/library
References


<table>
<thead>
<tr>
<th>Images</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slide 4 Teaching icon</td>
<td>Teaching icon: <a href="http://www.cmaid.org/wp-content/uploads/2013/03/teaching-icon.png">http://www.cmaid.org/wp-content/uploads/2013/03/teaching-icon.png</a></td>
</tr>
<tr>
<td>Slide 4 Noun project</td>
<td>Noun project - Working with laptop <a href="https://commons.wikimedia.org/wiki/File:Noun_project_-_Working_with_laptop.svg">https://commons.wikimedia.org/wiki/File:Noun_project_-_Working_with_laptop.svg</a> CC BY 3.0 US</td>
</tr>
<tr>
<td>Slide 7 Classroom-education-school-hand</td>
<td>Classroom-education-school-hand-381896/ CC0 Public Domain</td>
</tr>
<tr>
<td>14 Time management NasimAhmed96$</td>
<td>Time management NasimAhmed96$ - Own work CC BY-SA 4.0</td>
</tr>
<tr>
<td>22 Constructive alignment (Biggs &amp; Tang)</td>
<td>Constructive alignment (Biggs &amp; Tang) <a href="https://www.researchgate.net/figure/275040297_fig3_Fig-4-Constructive-alignment-Biggs-and-Tang-2007">https://www.researchgate.net/figure/275040297_fig3_Fig-4-Constructive-alignment-Biggs-and-Tang-2007</a></td>
</tr>
<tr>
<td>63 Daniele Lusk. Blooms-taxon-1k4snjn</td>
<td>Daniele Lusk. Blooms-taxon-1k4snjn <a href="https://www.google.nl/search?q=bloom%27s+taxonomy&amp;biw=1366&amp;bih=631&amp;tbm=isch&amp;tbo=u&amp;source=univ&amp;sa=X&amp;sqi=2&amp;ved=0ahUKEwj92pas3pnPAhVZOMAKHebbAWQQsAQIGw#q=bloom%27s+taxonomy&amp;tbm=isch&amp;tbs=sur:fmc&amp;imgref=NLj2s3moPA7fM%3A">https://www.google.nl/search?q=bloom%27s+taxonomy&amp;biw=1366&amp;bih=631&amp;tbm=isch&amp;tbo=u&amp;source=univ&amp;sa=X&amp;sqi=2&amp;ved=0ahUKEwj92pas3pnPAhVZOMAKHebbAWQQsAQIGw#q=bloom%27s+taxonomy&amp;tbm=isch&amp;tbs=sur:fmc&amp;imgref=NLj2s3moPA7fM%3A</a> CC BY SA</td>
</tr>
</tbody>
</table>