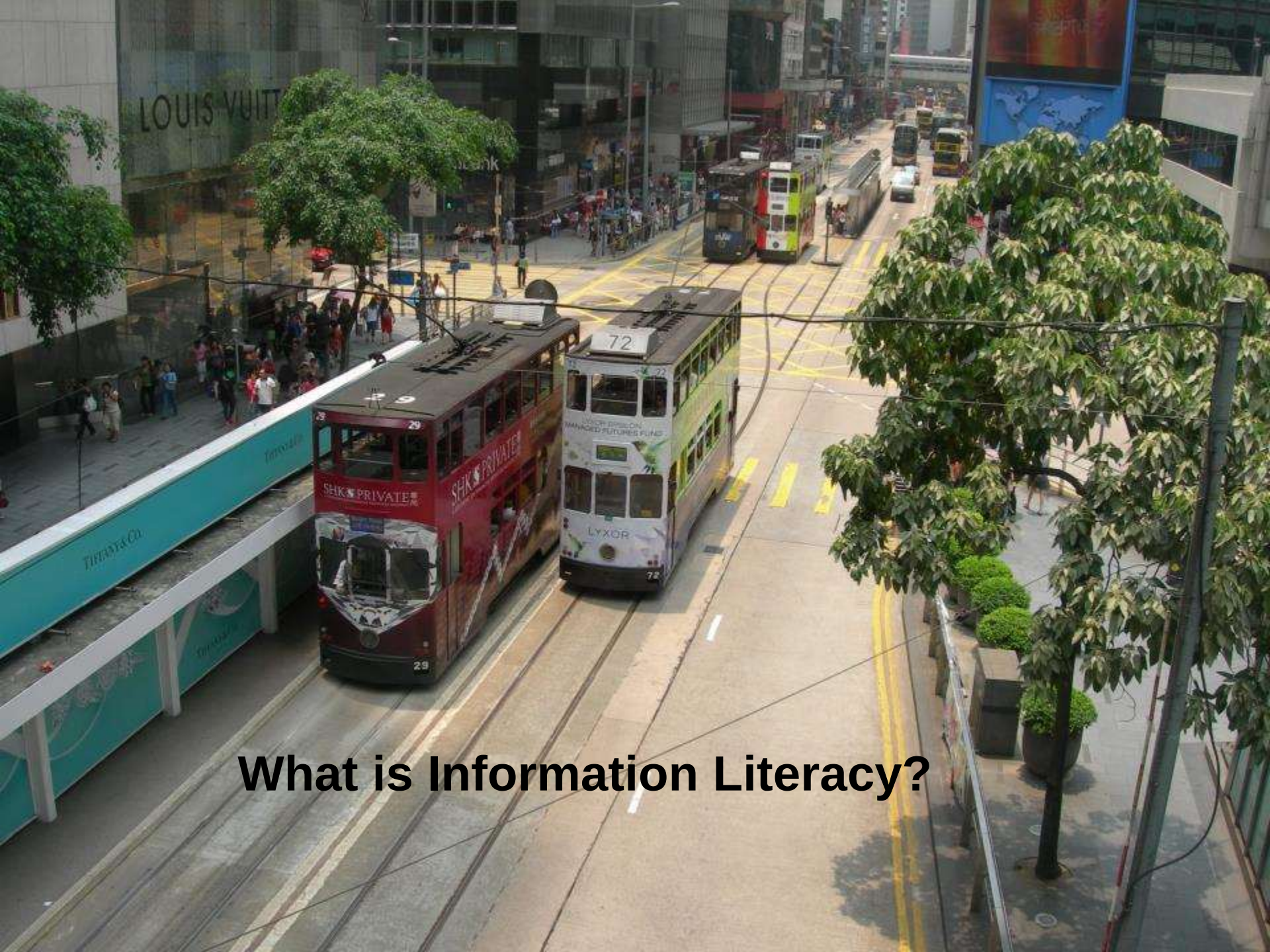
# Didactics of Information Literacy

Wolfgang G. Stock

Heinrich-Heine-University Düsseldorf, Germany, Department of Information Science

# INFORMATION LITERACY INSTRUCTION: HOW TO TEACH INFORMATION LITERACY?

- What is Information Literacy?
- Subject of its own right?
- Resource-based learning (Document-based learning)
- Inquiry-base learning
- Teacher-centered learning
- Team-based learning
- Game-based learning
- Conclusion




# What is Information Literacy?

# WHAT IS INFORMATION LITERACY?

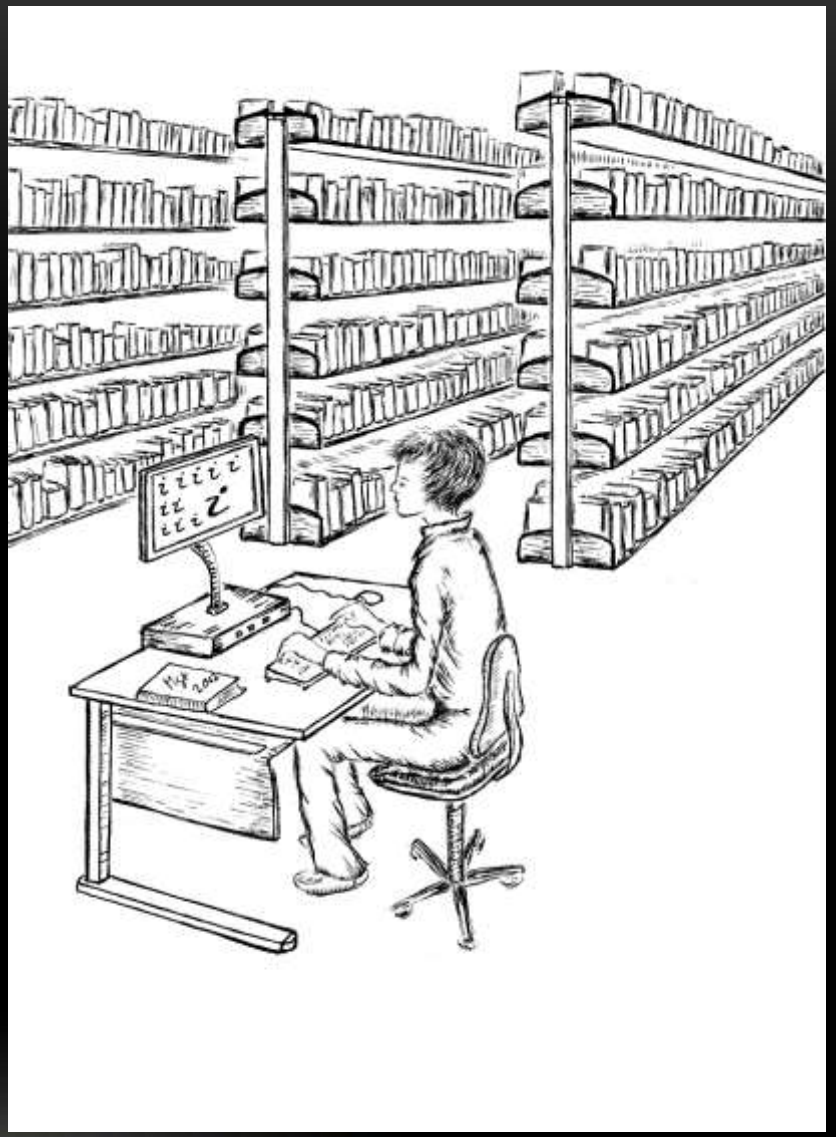
- Information Literacy is one of the basic skills of the 21st  century

(Illustrations by M. Stock)

# WHAT IS INFORMATION LITERACY?

- Information Literacy:
  Two competencies

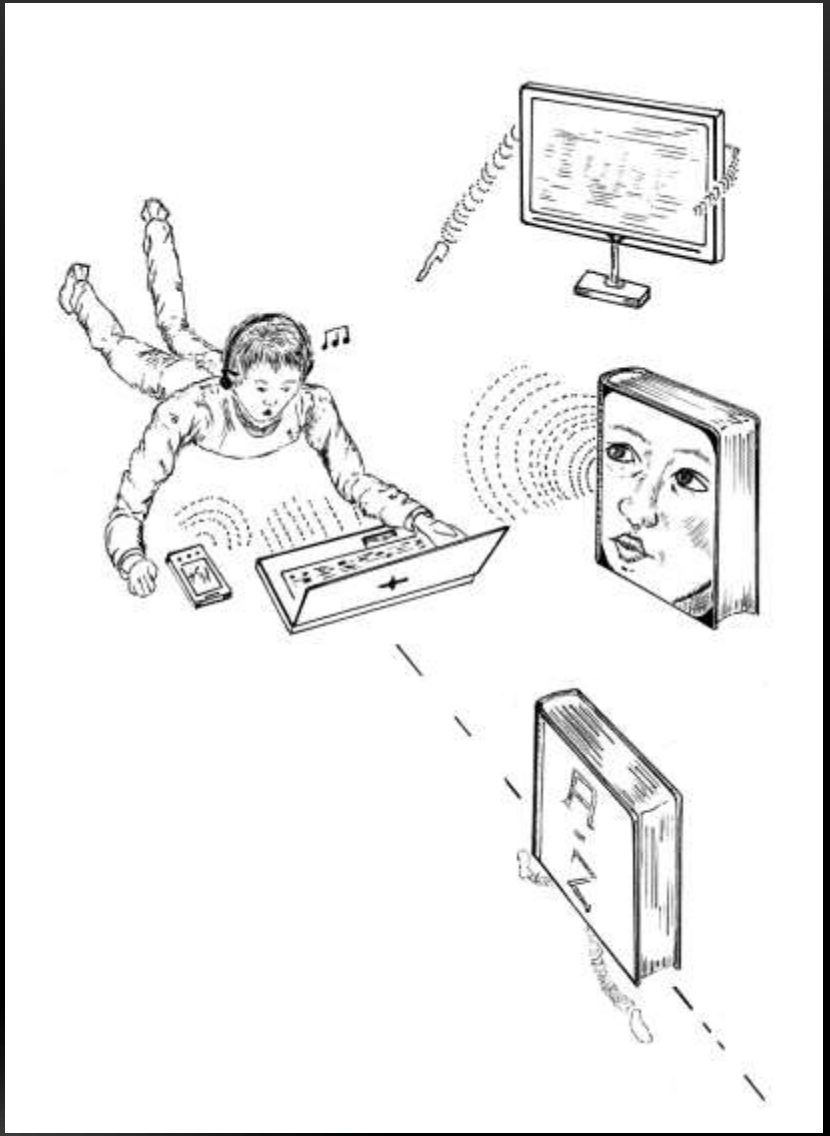
- 1. Information retrieval literacy
  - Searching, finding and using information
  - Special knowledge in the topical area
- Historical background:
  - Library instruction
  - ALA standards
  - „Six Big Skills“



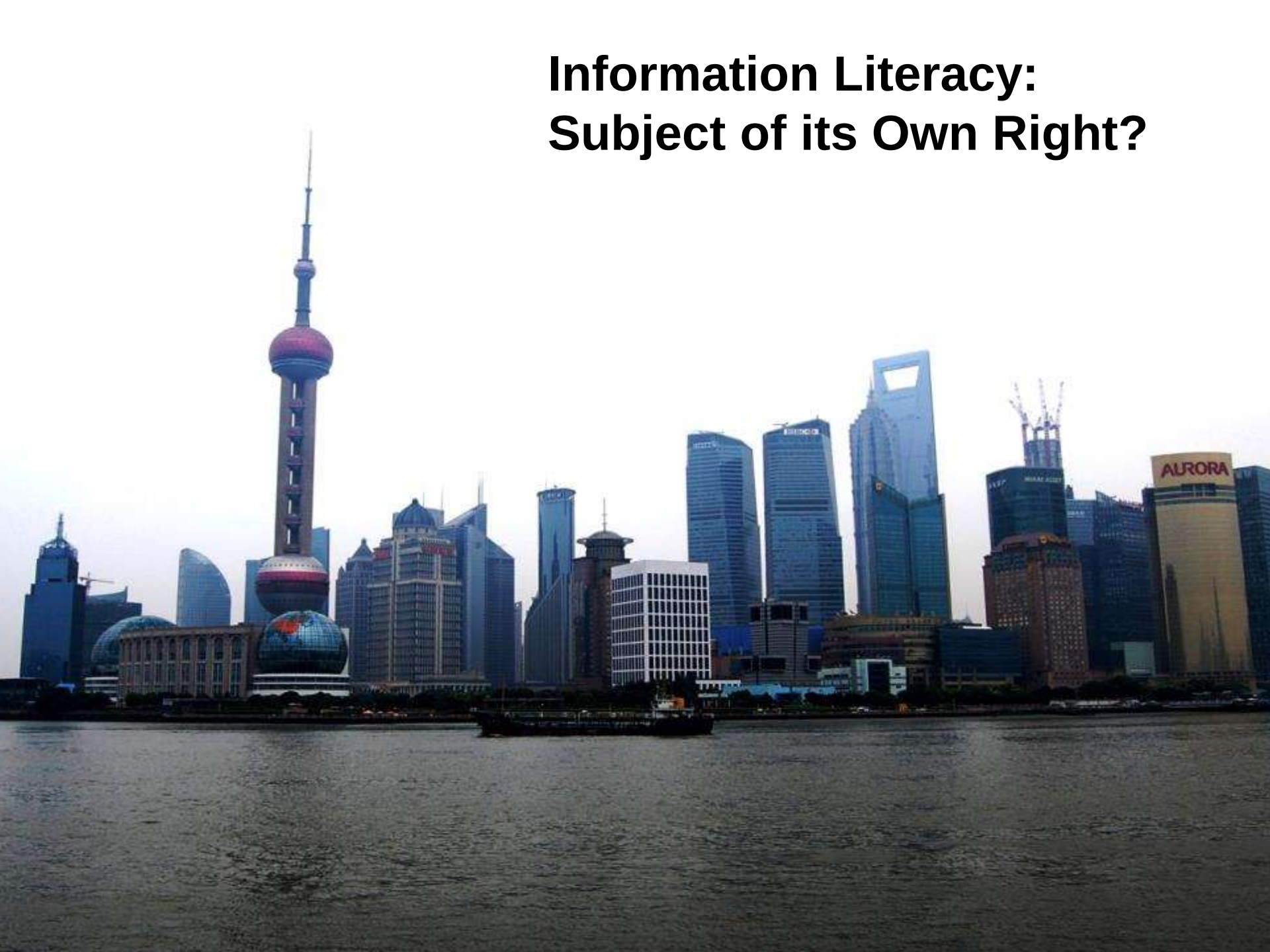
# WHAT IS INFORMATION LITERACY?

- Information Literacy:
  Two competencies

- 2. Knowledge representation literacy
  - Creation and publication of information
  - Indexing
- Historical background:
  - Web 2.0
  - „Produser“ / „Produsage“



# Information Literacy: Subject of its Own Right?

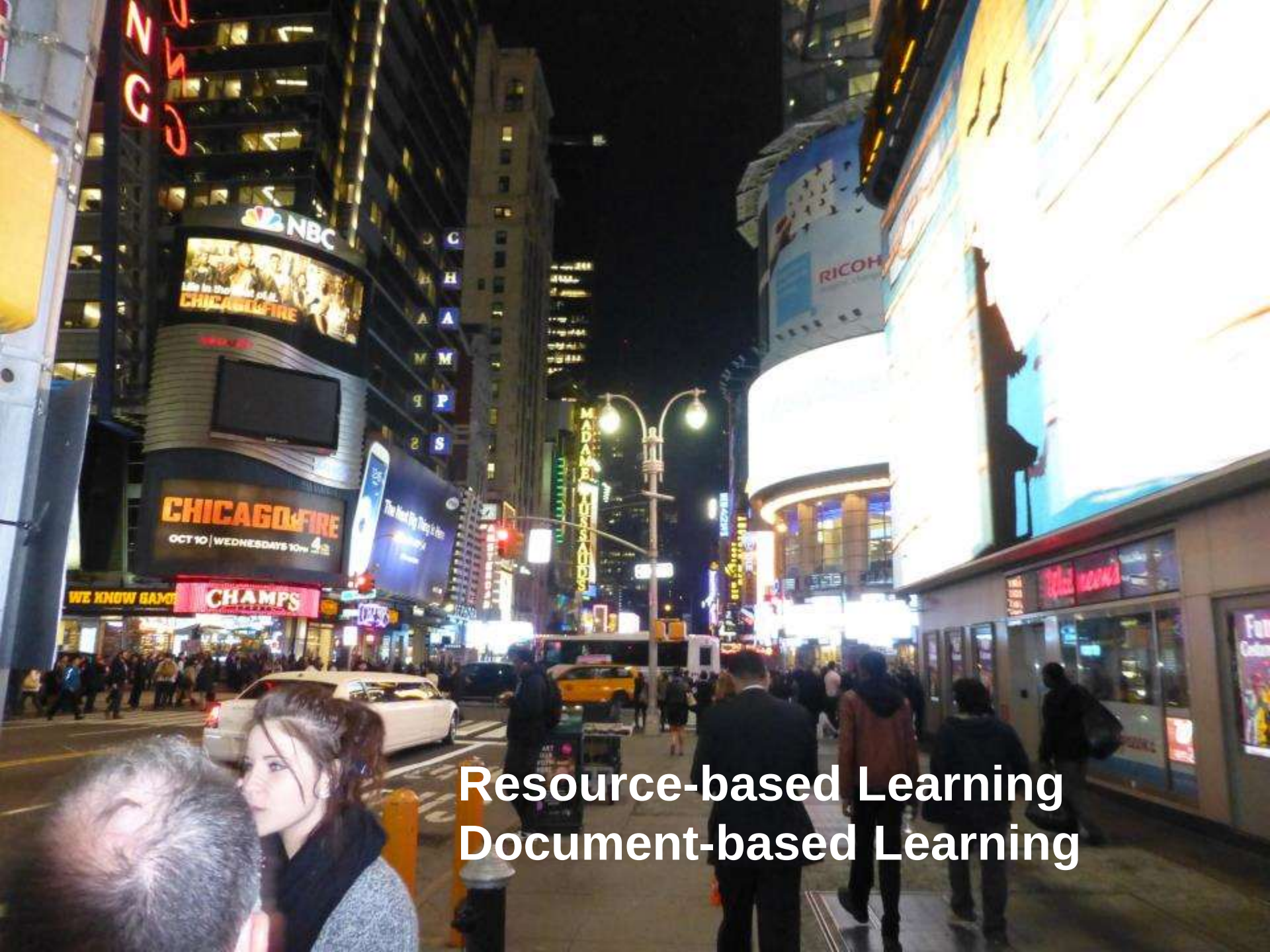


# INFORMATION LITERACY: SUBJECT OF ITS OWN RIGHT?

- First answer: no
- Embedded in other subjects‘ instruction
  - In primary schools: e.g., in language instruction or in general studies
  - In secondary schools: e.g., in history instruction
  - In universities: in combination with subjects studied (e.g. „Information Literacy for chemicists“, „Information Literacy for physicians“)

# INFORMATION LITERACY: SUBJECT OF ITS OWN RIGHT?

- Second answer: yes
  - Subject on its own right
    - In primary schools: probably not
    - In secondary schools: Düsseldorf model: 2 hours in grade 6; 2 hours in grade 10 or 11
    - In universities: „Information Literacy“ (independent of specific subjects)




# Resource-based Learning
# Document-based Learning

# RESOURCE-BASED LEARNING

- Also called: Document-based learning (Hannafin & Hill, 2008)
  - Resource: media, people, places, ideas „that have the *potential* to support learning“
  - Resource-based learning: „The use and application of available assets to support varied learning needs across contexts“

# RESOURCE-BASED LEARNING

- Scaffolding: „Process through which individuals are supported in identifying, interpreting, or otherwise using resources“
  - Procedural scaffolds (focusing cognitive resources)
  - Conceptual scaffolds (identification of knowledge, making connections between resources)
  - Metacognitive scaffolds (reflection, comparison, revision)
  - Strategic scaffolds (identifying ways to analyze, plan, and respond)

# RESOURCE-BASED LEARNING

- Tools: „Devices that aid individuals to engage and manipulate resources and ideas“
  - Processing tools (applied technology)
  - Searching tools (Web search engines, professional information services)
  - Manipulation tools (e.g., testing different scenarios)
  - Communication tools (synchronous tools: instant messaging, Skype; asynchronous tools: blogs, podcasts, microblogs, e-mail, wikis, social networks)

# RESOURCE-BASED LEARNING

- Resource-based learning in Information Literacy instruction
  - Information Literacy instruction is always resource-based
    - Retrieval literacy: ability to find and use *resources*
    - Knowledge representation literacy: ability to create and represent *resources*


# Inquiry-based Learning

# INQUIRY-BASE LEARNING

- Inquiry-base learning (Edelson, Gordin, & Pea, 1999)
  - Inquiry: pursuit of open questions (projects; „project-based learning“)
  - Authentic activities
  - Motivation for activity
  - Opportunities for learning
    - Developing general inquiry abilities (posing and refining research questions, planning and managing an investigation, analyzing and communicating results)
    - Acquiring specific investigation skills (e.g., controlled experimentation, modeling, synthesis of primary sources, exploration of quantitative data)

# INQUIRY-BASE LEARNING

- Opportunities for learning (cont‘d)
  - Developing an improved understanding of science concepts
    - Problematize (realizing boundaries of knowledge)
    - Demand (placing a demand for knowledge to complete the investigation)
    - Discover and refine (uncovering scientific principles, refining the principles in the investigation; „discovery learning“)
    - Apply (application of scientific understanding in the pursuit of the research question)

# INQUIRY-BASE LEARNING

- Technological support:
- ICT
  - Providing investigation tools
  - Providing knowledge resources
  - Providing record-keeping tools

# INQUIRY-BASE LEARNING

- Inquiry-based learning in Information Literacy instruction
  - (Nearly) all approaches of Information Literacy instruction apply inquiry-based learning
  - Example: Chu (2009)
    - Inquiry project-based learning in a primary school (grade 4)
    - Teachers: language teacher, general studies teacher, IT teacher, school librarian
    - Two projects in six months (Phase 1: The Earth; Phase 2: The History of Hong Kong and China)
    - Results: Evaluation of students, teachers and parents: improvement of Information Literacy and of enjoyment

# Teacher-centered Learning

# TEACHER-CENTERED LEARNING

- Inquiry-based learning does not mean to led the students alone
- Inquiry-based learning alone: only minimal learning success (Kirschner, Sweeler, & Clark, 2006)
- In combination with inquiry-based learning: teacher-based learning
- Implementation of project management (e.g., milestones)
- And (very important!): learning to learn

# TEACHER-CENTERED LEARNING

- Teacher-centered learning in information literacy instruction
  - In combination of inquiry-based learning
  - Phases with project-work (learner-based learning) and phases with teacher-centered learning (Mokhtar, Majid, & Foo, 2008)
  - Example (retrieval literacy instruction): Demonstration of the functionality of *Web of Science* by the teacher
  - Example (knowledge representation literacy instruction): Lecture on the thesaurus of *Medline* (*MeSH*)

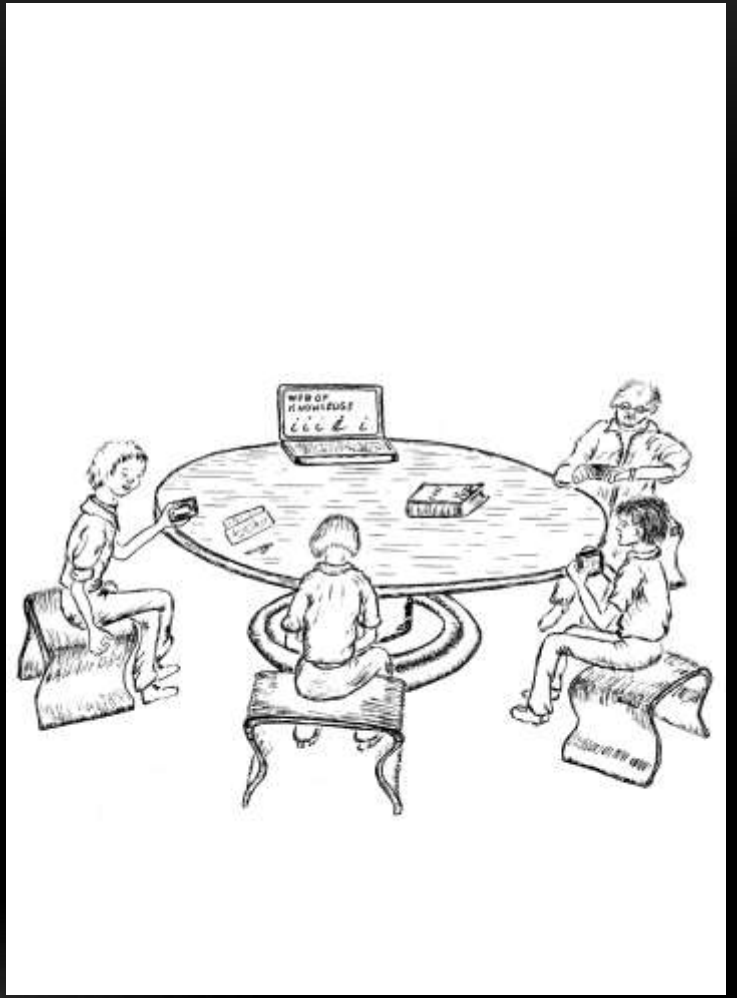

Team-based Learning

# TEAM-BASED LEARNING

- Team-based learning (in the sense of Michaelsen) (Michaelsen, Watson, Cragin, & Fink, 1982)
  - Team-formation and management (teams are permanent, formed by the instructor, and have the opportunity to develop into learning teams)
  - Accountability (team members are accountable to the rest of the team, every team member contributes to team discussions and problem solving, team members engage in peer assessment; the team performs as a whole)
  - Feedback (learning from other team members, necessary for group development)
  - Assignment design: the tRATs (team readiness assessment tests), additionally: iRATs (individual RATs)

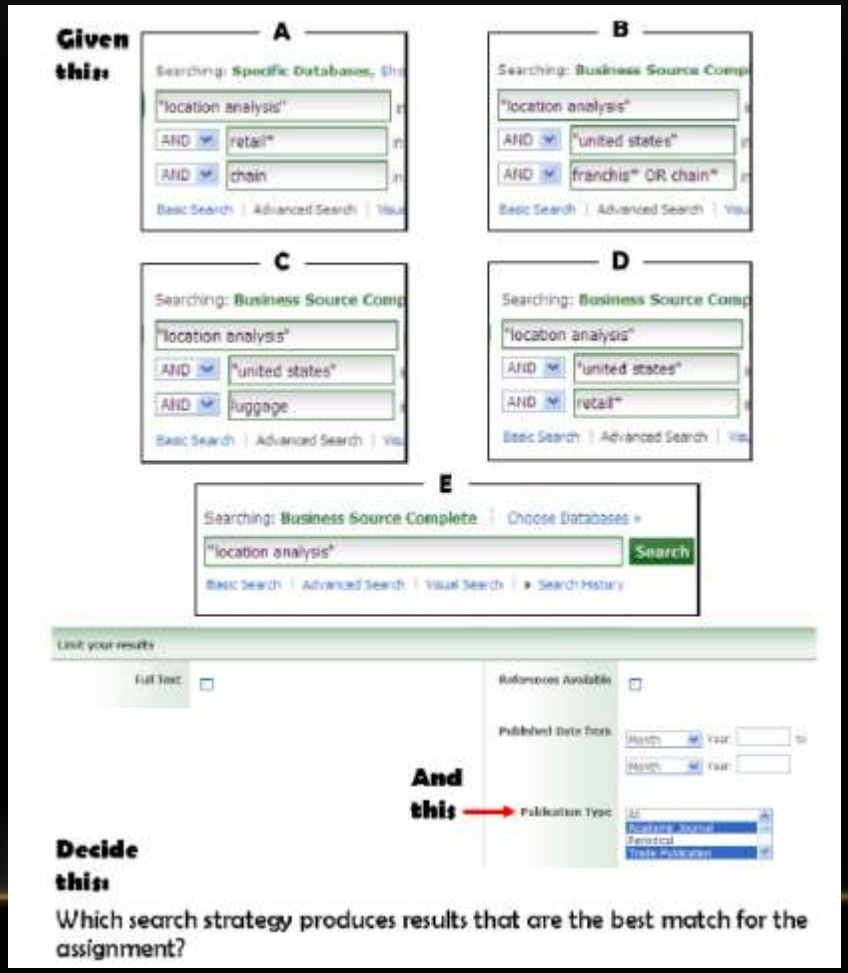
# TEAM-BASED LEARNING

- Team-based learning in Information Literacy instruction
  - Information Literacy course at the University at Albany, State University of New York (Jacobson, 2011)
  - Strategy: building students‘ engagement and making the course interactive
  - Tasks to fulfill by the teams



# TEAM-BASED LEARNING

- Team-based learning in Information Literacy instruction (Jacobson, 2011)



# Game-based Learning

# GAME-BASED LEARNING

- „Homo ludens“ (Johan Huizinga)
- Digital natives like to play (digital games) (Knautz, 2013)
- Gamification: Use of game mechanics in non-game environments
- Gamification fosters fun and intrinsic learning motivation

# GAME-BASED LEARNING

- Game mechanics in learning environments
  - Quests
  - Points
  - Levels
  - Badges (status symbols)
  - Achievements
  - Virtual goods
  - Leaderboards

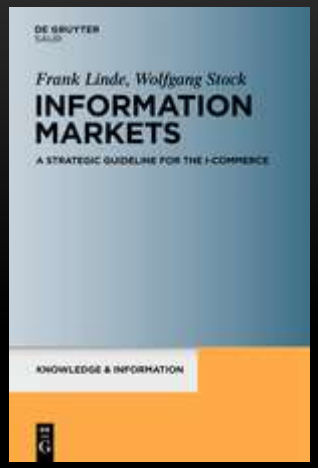
# GAME-BASED LEARNING

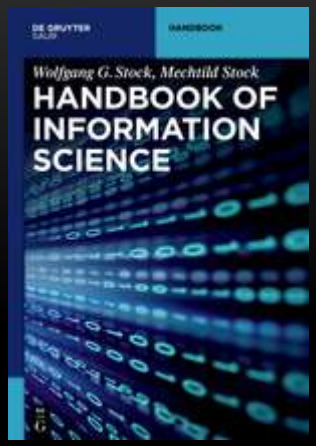
- Game-based learning in Information Literacy instruction
  - Heinrich-Heine-University Düsseldorf: Tutorial of the lecture „Knowledge Representation“ applied game mechanics (Knautz, Orszullok, & Soubusta, paper at ECIL, 2013)
  - Evaluation: great success (in terms of student engagement, local press reports, and country-wide radio broadcasting)

# Conclusion

# CONCLUSION

- Information Literacy includes Retrieval Literacy and Knowledge Representation Literacy
- In secondary schools and in universities, Information Literacy can be taught as a subject on its own right
- There is a bundle of didactic approaches to teach Information Literacy:
  - Resource-based learning (document-based learning)
  - Inquiry-based learning
  - Teacher-centered learning
  - Team-based learning
  - Game-based learning





Thank you!

Stock@phil.hhu.de

# LITERATURE


Ader, S., Orszullok, L., Stock, W. G. (2013). Informationskompetenz als Schulfach: Wer sollte was wann und wie unterrichten? In S. Gust von Loh & W. G. Stock (Eds.), Informationskompetenz in der Schule (pp. 259-271). Berlin, Boston, MA: De Gruyter Saur.

ACRL (2000). Information Literacy Competency Standards for Higher Education. Chicago, IL: ALA.

Chu, K. W. S. (2009). Inquiry project-based learning with a partnership of three types of teachers and the school librarian. Journal of the American Society for Information Science and Technology, 60(8), 1671-1686.

Edelson, D. C., Gordin, D. N., & Pea, R. D. (1999). Adressing the challenges of inquiry-based learning through technology and curriculum design. The Journal of the Learning Sciences, 8(3/4), 391-450.

Gust von Loh, S., & Stock, W. G. (2013). Informationskompetenz als Schulfach? In S. Gust von Loh & W. G. Stock (Eds.), Informationskompetenz in der Schule (pp. 1-20). Berlin, Boston, MA: De Gruyter Saur.

# LITERATURE (CONT'D)

Hannafin, M. J., & Hill, J. R. (2008). Resource-based learning. In J.M. Spector, M.D. Merrill, J. van Merriënboer, & M.P. Driscoll (Eds.), Handbook of Research on Educational Communications and Technology (pp. 525-536). 3rd Ed. New York, NY: Lawrence Erlbaum Ass.

Jacobson, T. E. (2011). Team-based learning in an information literacy course, Communications in Information Literacy, 5(2), 82-101.

Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work. An analysis of the failure of constructivist, discovery, problem-based, experiental, and inquiry-based teaching. Educational Psychologist, 41(2), 75-86.

Knautz, K. (2013). Gamification im Kontext der Vermittlung von Informationskompetenz. In S. Gust von Loh & W. G. Stock (Eds.), Informationskompetenz in der Schule (pp. 223-257). Berlin, Boston, MA: De Gruyter Saur.

Michaelsen, L. K., Watson, W. E., Cragin, J. P., & Fink, L. D. (1982). Team-based learning: A potential solution to the problems of large classes. Exchange. The Organizational Behavior Teaching Journal, 7(4), 18-33.

Mokhtar, I. A., Majid, S., & Foo, S. (2008). Teaching information literacy through learning styles. The application of Gardner's multiple intelligences. Journal of Librarianship and Information Science, 40(2), 93-109.