Computer Supported Collaborative Learning

Carolyn Penstein Rosé and Oliver Ferschke

Language Technologies Institute/
Human-Computer Interaction Institute
Before we start: looking back

- What scripts do you see at play in games like LotRO?
- How do these scripts differ from the ones we are discussing today?
- Do concepts like internal/external and micro/macro scripts apply here too?
- How do these scripts affect game play in general and collaboration specifically?
Recap: Scripts

- What are collaboration script?
- What are scripts used for?
- How can scripts look like? What scope can they have?
- What do we mean by “reification of scripts”?
Internal and External Scripts

External Scripts

Internal Scripts
Internal and External Scripts

External Scripts
Instructional psychology: scripts residing in an individual’s surround

Internal Scripts
Cognitive psychology: scripts residing in the person-solo

How does this connect to ZPD?
The myth of over-scripting: Adaptable scripts to the rescue?

What were the two papers about?
Main take-away messages?
Stegmann et al. differentiate

- over-scripting
- “too much” scripting
- Cognitive under-scripting
- malfunctional Scripting

- Why the “myth” of over-scripting?
Negative Script Interaction

- Over-scripting
  - Internal vs. external scripts
  - What is the ideal fit?

- Also over-scripting?
  - Macro vs. micro scripts
  - Dynamic vs. static scripts?
Other Negative Effects of Scripting

- Disturb “natural” interactions and problem solving processes
- Increase cognitive load
- Didactising collaborative interactions
- Goalless interactions
Coercion

(least to most coercive)
1. Induced scripts
2. Instructed scripts
3. Trained scripts
4. Prompted scripts
5. Follow-me scripts

What are the pros and cons? Where would each type of script be most appropriate?
Stegman et al. Study

From the abstract:

“our reframing of over-scripting allowed us to differentiate between under-scripting, over-scripting and, finally, malfunctional scripts”

How is this reflected in the setup of the study?
Do the results make these effects clear?
Stegman et al. - Results

Influence of scripting and degree of scripting on
- Epistemic Quality
- Quality of argumentation
- Knowledge of argumentation
- Domain-specific knowledge
- Motivation during Argumentative Knowledge Construction
- Application of argumentative knowledge
Stegman et al. - Results

- Argumentative knowledge and quality of argumentation are both predictors of domain specific knowledge acquisition
- Epistemic Quality
  - Scripting and degree of scripting irrelevant
- Quality of argumentation
  - Strong influence of scripting.
  - Degree marginally significant.
- Knowledge of argumentation
  - Strong influence of scripting.
  - Degree marginally significant.
- Domain-specific knowledge
  - Scripting and degree of scripting irrelevant
- Motivation during Argumentative Knowledge Construction
  - Scripting condition has negative influence
  - Degree of scripting irrelevant
- Application of argumentative knowledge
  - Scripting marginally significant
  - Degree irrelevant

Do the results explain the “myth” in the title?
Scripting and motivation

“Intrinsic motivation […] [was] measured using an online questionnaire after the online discussion of the post-test case.”

Are there any risks of measuring motivation this way?
Adaptable scripts: a solution to over-scripting?
Adaptable Scripts

- What is an adaptable script?
- What can we adapt?
Wang et al. study

- Research questions: effects of adaptability on
  - domain-specific knowledge acquisition
  - domain-general skill acquisition
  - self-planning
  - script adherence
Wang et al. study

- Research questions: effects of adaptability on
  - domain-specific knowledge acquisition
    - scripting negative ← was positive in earlier study. OVER-SCRIPTING?
    - no significant difference between adaptable/non-adaptable
  - domain-general skill acquisition
    - scripting positive
    - adaptability increases skill acquisition compared to unscripted cond.
    - BUT no significant difference between non-adaptable and adaptable
  - self-planning
    - More self-planning in the adaptable condition
    - (→ students made use of adaptability)
  - script adherence
    - adaptable scripting leads to lower engagement with the script
Is there actually demand for adaptive support according to the papers?  
Or should every group get the same (amount of) support?  
Might it be worse to UNDER-script rather than over-script? (they all gain from support)
Influence of Group Composition

- How does group composition affect adaptability of scripts?
  - Small vs. large groups
  - Open (MOOC) vs. closed (classroom) groups

- Should a script for a collabor. activity be adaptable by each individual in the group or only by the group as a whole?
  - Can we have different levels of scaffolding/scripting in a single group of heterogeneous learners?
Adaptable Scripts in the Wild

- Do learners always know what level of scaffolding is best for them?
- What could happen if they don't?
From adaptability to adaptivity

- What’s the difference?
- Pros and cons
- What do we need to build adaptive scripts?
Design Activity

How could we design a group collaboration script that supports individuals separately.

In particular: Think of heterogeneous groups compositions heterogeneous.
Questions?