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Peer Production of Online Learning Resources: A Social Network Analysis

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A Social Network Analysis

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Instructional Architect

- A web-based application for teachers to freely find, gather, and produce instructional activities for their students.
- Teachers can share these resulting activities, called IA projects.

IA Social Networks

directed, weighted networks

View network
Copy network

nodes
teacher users
teacher users

arc
B viewed A's project(s)
B copied A's project(s)

weight
the number of times B viewed A's project(s)
the number of times B copied A's project(s)

Project Creation, View, Copy

- The mean number of IA projects created initially increases as the number of views increases but then saturates except for a peak when out-degree > 25.
- The mean number of IA projects created does not saturate as a function of the number of copies and exhibits an increasing trend.
- The copy action appears to be a better metric for describing meaningful user's activity in the IA network, as opposed to the view action.

Clique Analysis

- Clique: a subgraph in a network in which every two vertices are connected by an edge.
- K-clique-community: the union of all k-cliques that can be reached from each other through a series of adjacent k-cliques.

The largest 3-clique-communities

Summary of the Two Networks

<table>
<thead>
<tr>
<th>View Network</th>
<th>Copy network</th>
</tr>
</thead>
<tbody>
<tr>
<td># of in-degree</td>
<td>Avg</td>
</tr>
<tr>
<td>View Network</td>
<td>5.12</td>
</tr>
<tr>
<td>Copy network</td>
<td>2.41</td>
</tr>
</tbody>
</table>

- The view network is much denser.
- From a user perspective, viewing represents an action with a much lower "cognitive" cost (a simple click) compared to a copy action (which represents a decision to use/adapt the content). The difference in cognitive cost is reflected in the much sparser copy network compared to the view network.

Teacher Interactions

View action

- created
- viewed

Copy action

- created
- copied

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