



«Использование анализа социальных сетей для формирования учебных групп»

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высшего образования

«Университетские традиции: ресурс или бремя?»

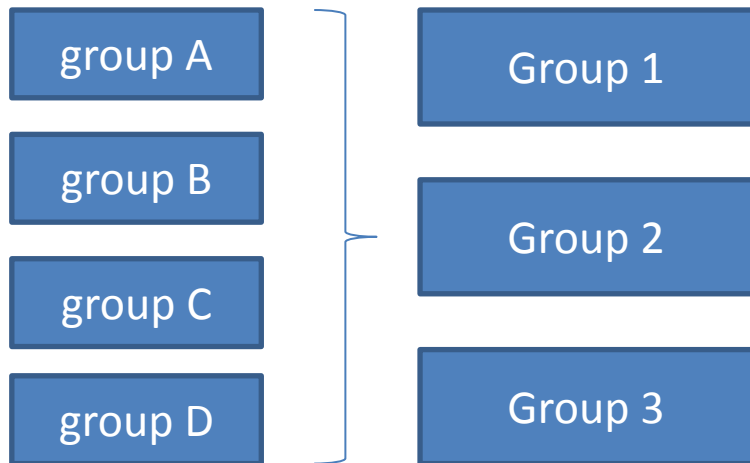
Москва
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Forming students groups seems to be
a tough problem!



Challenge

Task: regroup 4 student groups into 3 equally sized, homogenous groups with equal average score



$$N1 = N2 = N3 = 26$$

$$S1 = S2 = S3$$

N – group size

S – average score

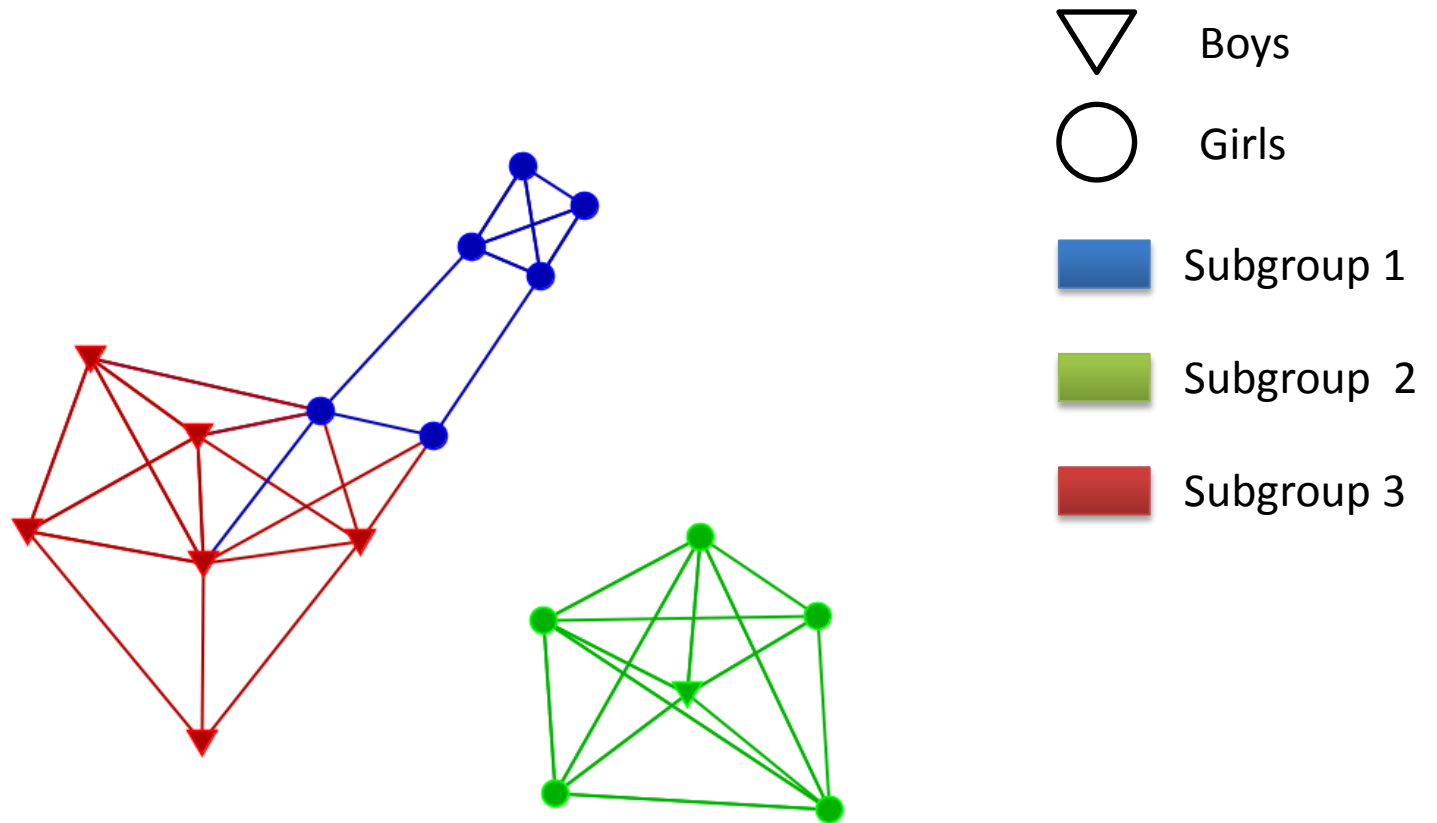
2 Approaches

Approach1: «Weak link»

Approach2: «Melting pot»



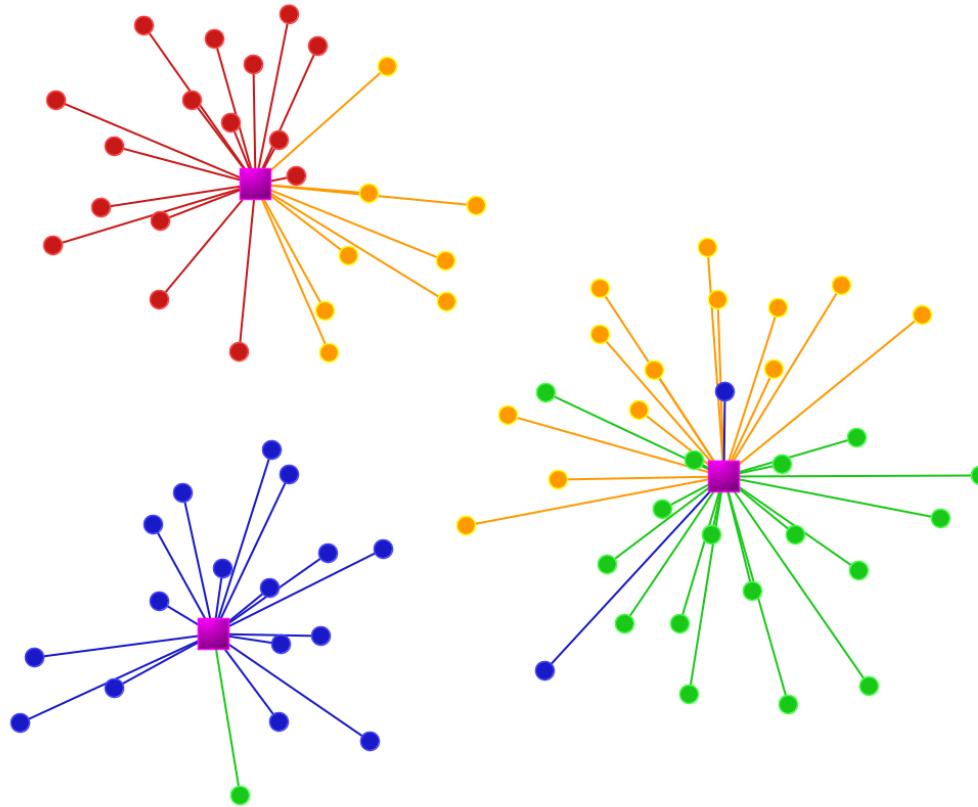
“Weak link” principle



Approach 1 results

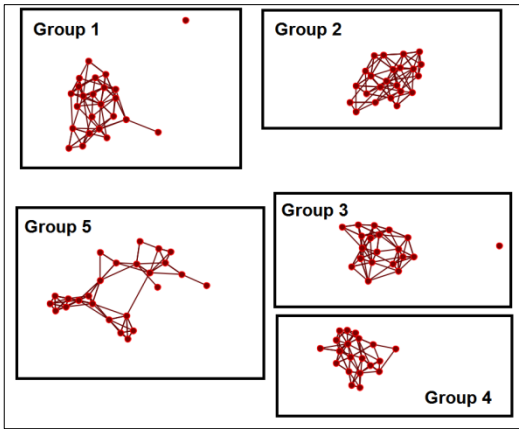
Standard Network Analysis	221_1	221_2	222_1	222_2	223_1	223_2	224_1	224_2
Row count	18.000	18.000	19.000	19.000	22.000	22.000	19.000	19.000
Column count	18.000	18.000	19.000	19.000	22.000	22.000	19.000	19.000
Link count	63.000	48.000	60.000	46.000	74.000	58.000	58.000	49.000
Density	0.206	0.157	0.175	0.135	0.160	0.126	0.170	0.143
Components of 1 node (isolates)	0	0	2	2	0	0	2	2
Components of 2 nodes (dyadic isolates)	0	0	0	0	0	0	0	0
Components of 3 or more nodes	2	1	1	1	1	1	1	1
Reciprocity	0.575	0.333	0.500	0.533	0.423	0.349	0.611	0.531
Characteristic path length	1.548	3.167	2.570	2.759	2.910	2.379	2.547	2.365
Clustering coefficient	0.637	0.348	0.485	0.296	0.454	0.351	0.519	0.391
Network levels (diameter)	4.000	9.000	6.000	7.000	6.000	6.000	6.000	6.000
Network fragmentation	0.471	0.000	0.205	0.205	0.000	0.000	0.205	0.205
Krackhardt connectedness	0.529	1.000	0.795	0.795	1.000	1.000	0.795	0.795
Krackhardt efficiency	0.631	0.860	0.800	0.883	0.852	0.895	0.833	0.867
Krackhardt hierarchy	0.575	0.314	0.221	0.412	0.250	0.820	0.538	0.724
Krackhardt upperboundedness	0.877	1.000	1.000	1.000	1.000	0.767	1.000	1.000
Degree centralization	0.099	0.121	0.145	0.191	0.112	0.176	0.121	0.119
Betweenness centralization	0.057	0.323	0.229	0.191	0.239	0.070	0.120	0.143
Closeness centralization	0.053	0.314	0.116	0.125	0.268	0.177	0.205	0.242
Eigenvector centralization	0.468	0.301	0.325	0.305	0.258	0.425	0.457	0.482
Reciprocal (symmetric)?	No (57% of the links are reciprocal)	No (33% of the links are reciprocal)	No (50% of the links are reciprocal)	No (53% of the links are reciprocal)	No (42% of the links are reciprocal)	No (34% of the links are reciprocal)	No (61% of the links are reciprocal)	No (53% of the links are reciprocal)

Approach 2 principle

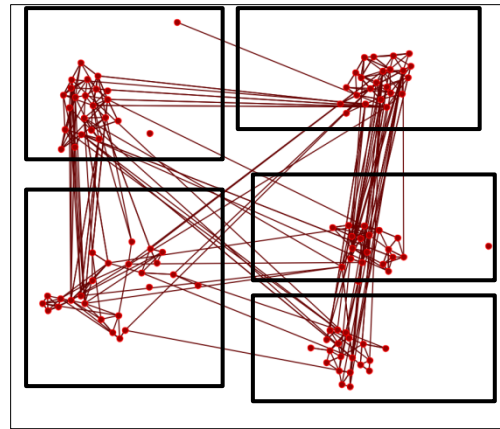


Solution summary

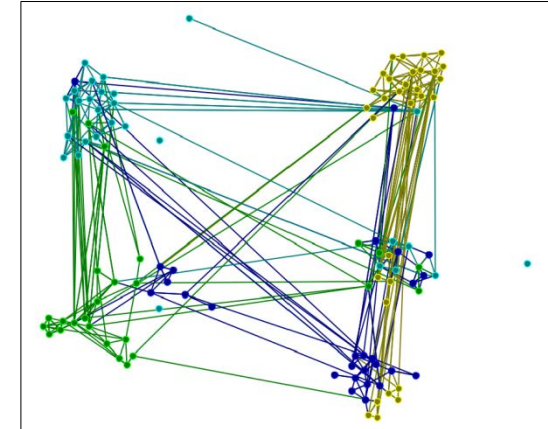
Initial groups



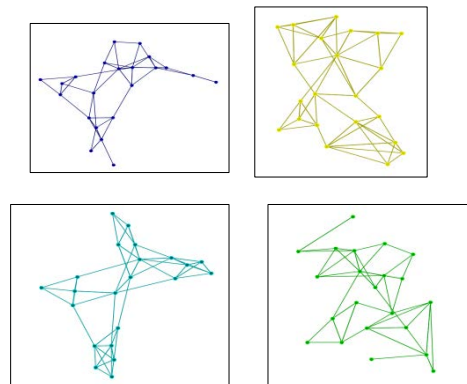
Faculty-level ties



Clustering



New Groups



Sociometric questionnaire

Ваше имя и фамилия
№ группы

Group level

1. С кем из группы Вы общаетесь чаще всего?

A.
B.
C.
D.

2. Кому в группе Вы доверяете больше всего?

A.
B.
C.
D.

Faculty level

3. К кому на курсе Вы обычно обращаетесь за информацией, связанной с учебой?

A.
B.
C.
D.
E.

4. К кому на курсе Вы обычно обращаетесь за помощью, обдумывая новую или сложную проблему, связанную с учебой?

A.
B.
C.
D.
E.

5. Вы бы учились лучше, если бы смогли чаще общаться с этими людьми на курсе:

A.
B.
C.
D.
E.

⇒ Communication

⇒ Trust

⇒ Information

⇒ Advice

⇒ Improvement







Approach 1



Approach 2





Key Results

	1 st interval	2 nd interval	Year later
Average score	 57%	 37%	 42%
Rating position	 35%	 68%	 52%

% - percentage of students, who increased their average score and position in cumulative rating

Comparative results

Type of groups	1 st interval		2 nd interval		Year later	
	Score change	Score increase	Score change	Score increase	Score change	Score increase
	↑ 48%	+0,24	↑ 48%	+0,84	↑ 48%	+1
	↑ 63%	+0,49	↑ 34%	+0,44	↑ 41%	+0,45

Score change -- % of students, who increased their average score according to current rating
Avg. score increase – mean increase of average score

Future steps

- Finalize data analysis
- Conduct a survey
- Publish a paper with results
- Present a methodology

Thank you!

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