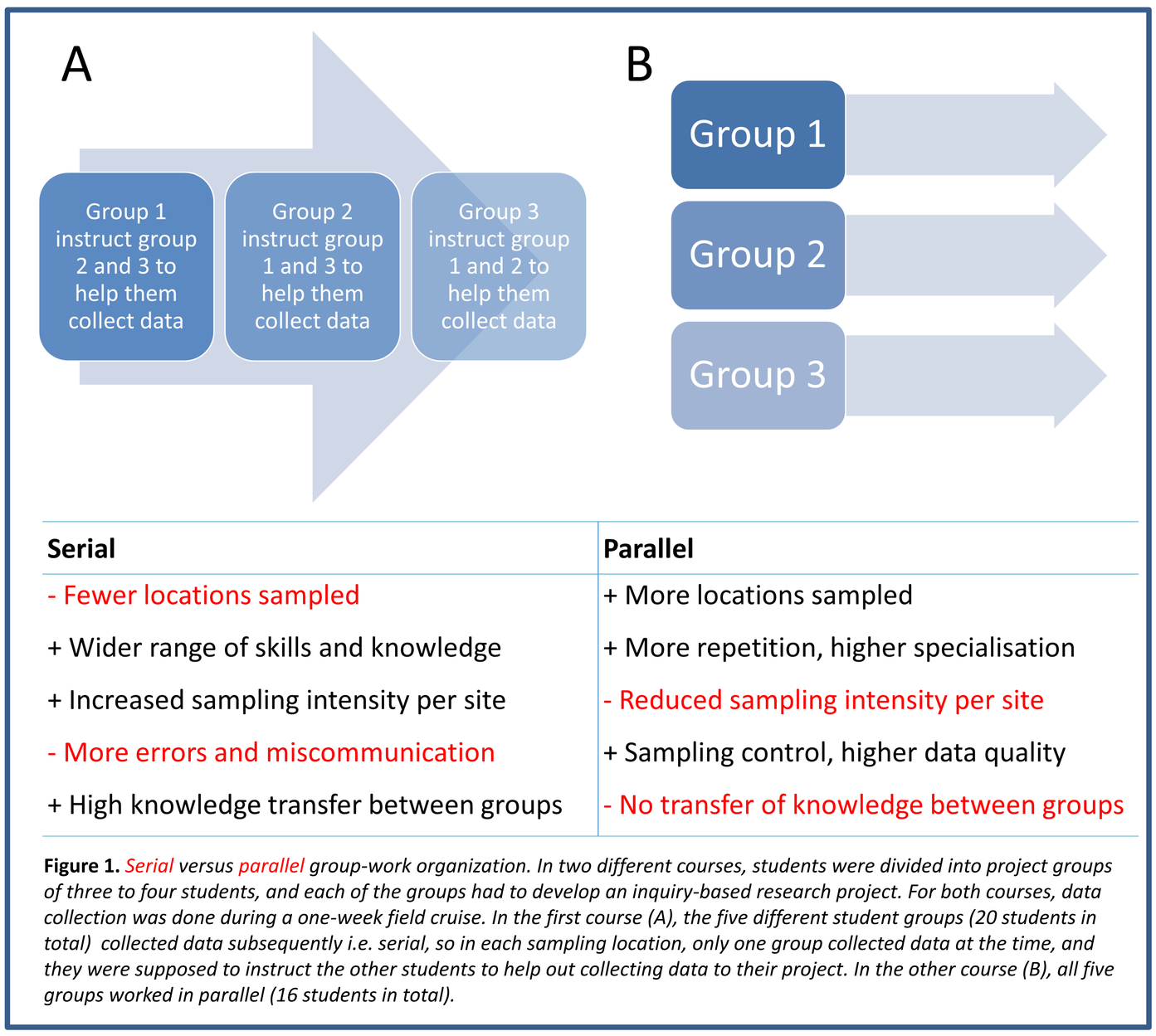
Developing learning culture through field work – effect of group-work organization

Pernille Bronken Eidesen & Tina Dahl, The University Centre in Svalbard (UNIS) and Centre for Excellence in Biology Education (bioCEED), *pernillee@unis.no*

- How we organize group-work in the field promote different learning environments, learning outcome and to some extent the learning culture.
- We present pro- and cons with parallel versus serial group-work organization during data collection for inquiry-based student research projects.
- **To combine benefits from both, do serial sampling before going parallel.**

Based on individual reflection notes from students, serial group-work organization created higher risk of conflicts both within and between groups (Fig. 1): 63% found work organization and/or communication within the group challenging, and 84% reported that they found it challenging to organize other students. However, *all students found it beneficial to help out other groups, and the majority could transfer this knowledge to improve their own work*.

Parallel group-work organization initiated less knowledge transfer, but also less conflict during sampling, and higher quality of the data collection (Fig. 1). Although 62% found it challenging to plan out a project within the group, only one group reported problems with miscommunication during sampling.



Serial	Parallel
- Fewer locations sampled	+ More locations sampled
+ Wider range of skills and knowledge	+ More repetition, higher specialisation
+ Increased sampling intensity per site	- Reduced sampling intensity per site
- More errors and miscommunication	+ Sampling control, higher data quality
+ High knowledge transfer between groups	- No transfer of knowledge between groups

Figure 1. *Serial versus parallel group-work organization. In two different courses, students were divided into project groups of three to four students, and each of the groups had to develop an inquiry-based research project. For both courses, data collection was done during a one-week field cruise. In the first course (A), the five different student groups (20 students in total) collected data subsequently i.e. serial, so in each sampling location, only one group collected data at the time, and they were supposed to instruct the other students to help out collecting data to their project. In the other course (B), all five groups worked in parallel (16 students in total).*

Combine? Serial group-work organization add an extra dimension of learning, but at master/PhD level the requirements for quality may favour parallel group-work organization. When students are testing their sampling scheme before going "real", we suggest doing so in a serial manner. In this way flaws in planned sampling schemes and internal miscommunication is efficiently revealed, and good solutions can be shared.

"The thing I realized when helping out other groups was actually how to improve my own group's sampling."
(From student reflection after serial group-work organization)

bioCEED Centre of Excellence in Biology Education
Centre for Excellence in Education
UNIS The University Centre in Svalbard
UNIVERSITY OF BERGEN
HAVFORSKNINGSINSTITUTTET INSTITUTE OF MARINE RESEARCH