COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF

DESKTOP VIDEOCONFERENCING

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COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC

A project carried out in cooperation with

Faculty of Philosophy, University of Zagreb
and
Croatian Academic and Research Network -CARNet

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COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC

The reasons for carrying out the project:

- increased use of room and desktop videoconferencing in Croatian academic community
- finding out the optimal frame rate and determining required bandwidth in the network for effective and satisfied use of DVC.

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Method

Method:

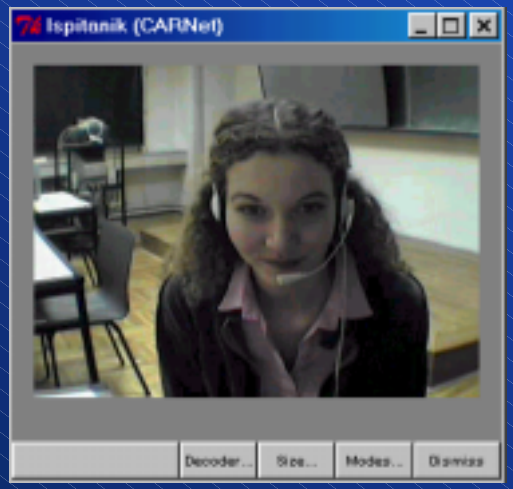
- experimental research
- carried out at the CARNet RDLab
- N=104, students without previous experience with desktop videoconferencing (DVC).

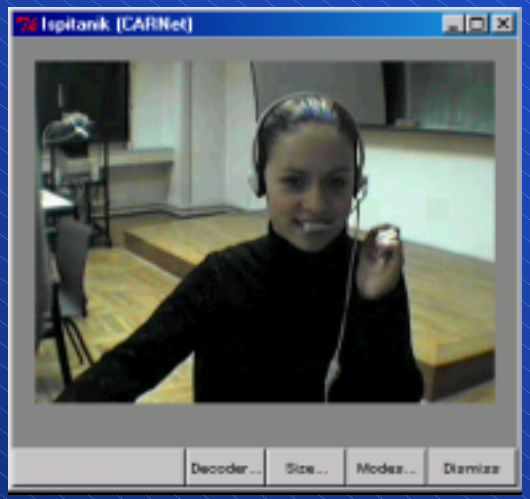
COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Method

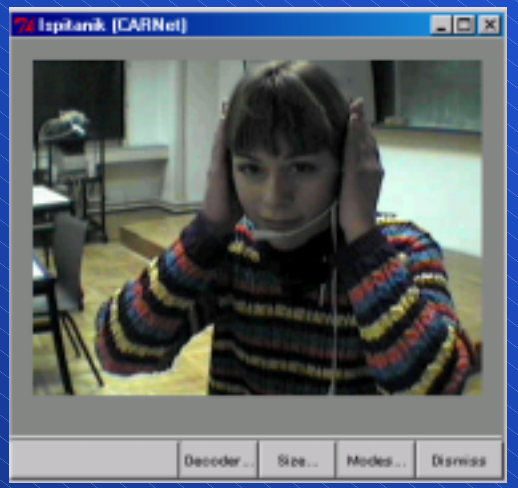
Method:

- Participants were divided into three groups distinguished by picture quality (frame rate)
- Each participant was given two tasks:
  - Visual (pantomime)
  - Non-visual (meeting appointment)
- Measures:
  - Time needed for tasks solving
  - Number of eye-contacts
  - Questionnaires

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Method







COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Method

	G 1 (N=34)			G 2 (N=36)			G 3 (N=34)		
Picture quality (FR)	3 fps			6 fps			18 fps		
Tasks	Vis.	N-Vis.		Vis.	N-Vis.		Vis.	N-Vis.	
Measures	t	t	eye-cont.	t	t	eye-cont.	t	t	eye-cont.
	questionnaire			questionnaire			questionnaire		

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Task categories

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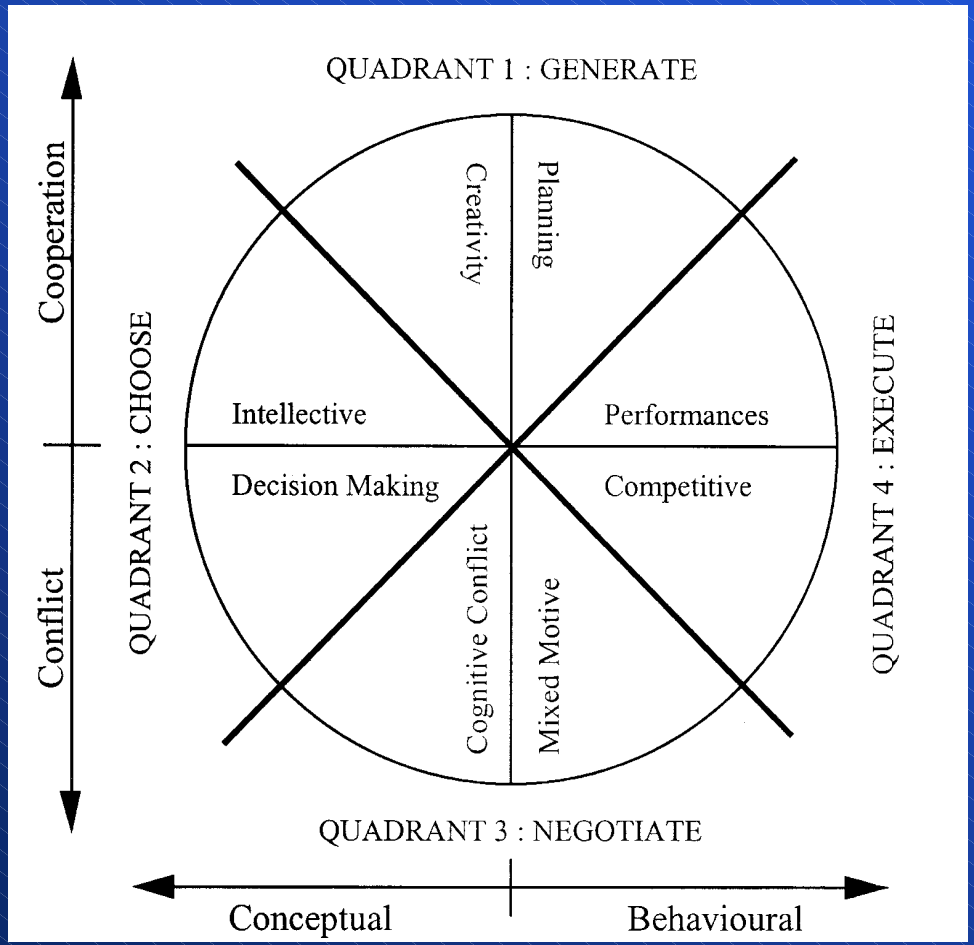
In what situations,
considering the type of group tasks,
the usage of DVC systems is acceptable?

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Task categories

McGrath task circumplex



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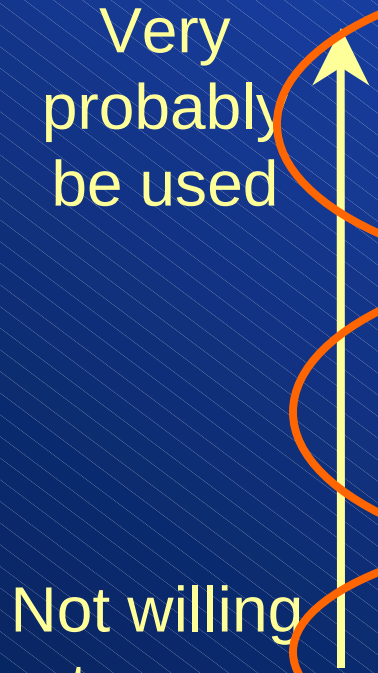
COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Task categories

Results:

- the differences in preferences to use DVC systems with the respect to various categories of tasks are significant.

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Task categories



TASK CATEGORIES	C
Performances	4
Planning tasks	4
Intellective tasks	4
Crativity tasks	3
Decision making	3
Contests / battles	3
Mixed motive tasks	2
Resolving conflicts	2

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Task categories

Results:

- students are more prepared to use DVC systems in occasions of collaboration, contrary to occasions involving certain type of conflict between parties.

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Non-verbal communication

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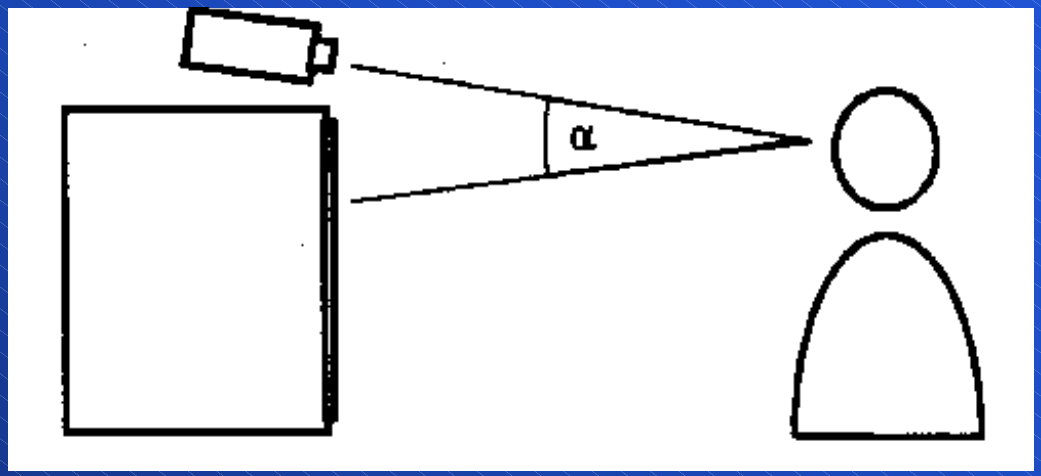
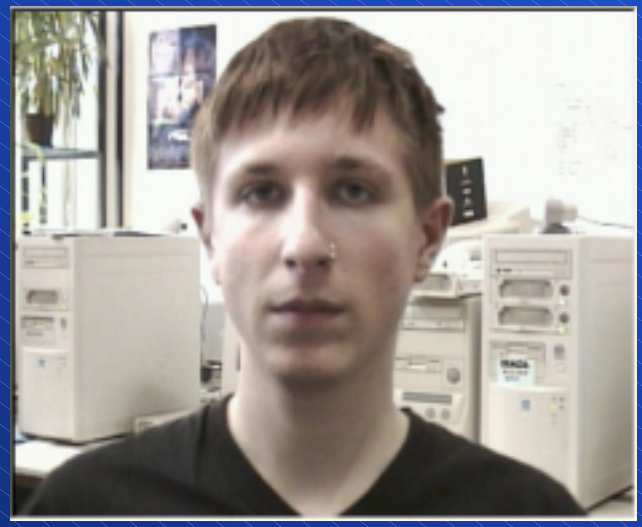
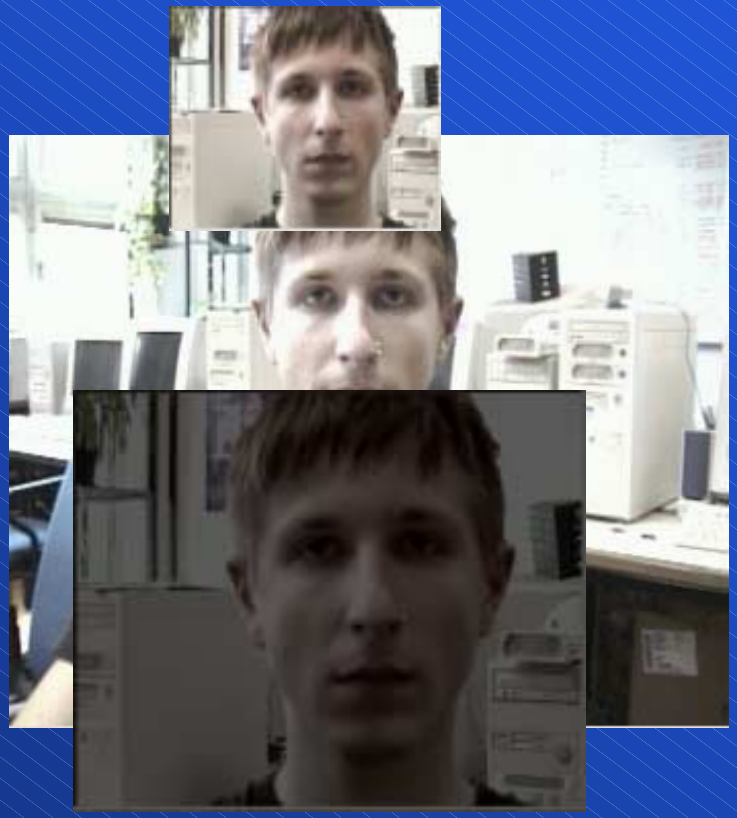
What are the possibilities of DVC systems in transferring non-verbal communication signs?

Example - eye contact





Example - facial expresion and gestures



COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC – Non-verbal communication

The changes occurring in the transmission of non-verbal signs:

- quantitative – there are non-verbal signs that can not be transferred through DVC systems
- qualitative – reduced effect of transferred non-verbal signs (influence of TV).

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Picture quality

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How the picture quality,
determined by frame rate,
influences the effectiveness of communication?

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Picture quality

Frame rate (FR)

- the number of frames displayed per second (fps)
- determines the experience of continuous motion
- directly determines price of DVC systems
- usually lower than in standard broadcasting.

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Picture quality

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	questionnaire			questionnaire			questionnaire		

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Picture quality

FR:

- 3 fps - videoconferencing over the Internet
- 6 fps - the limit value of FR that allow efficient information transfer
- 18 fps - experience of continuous, smooth motion.

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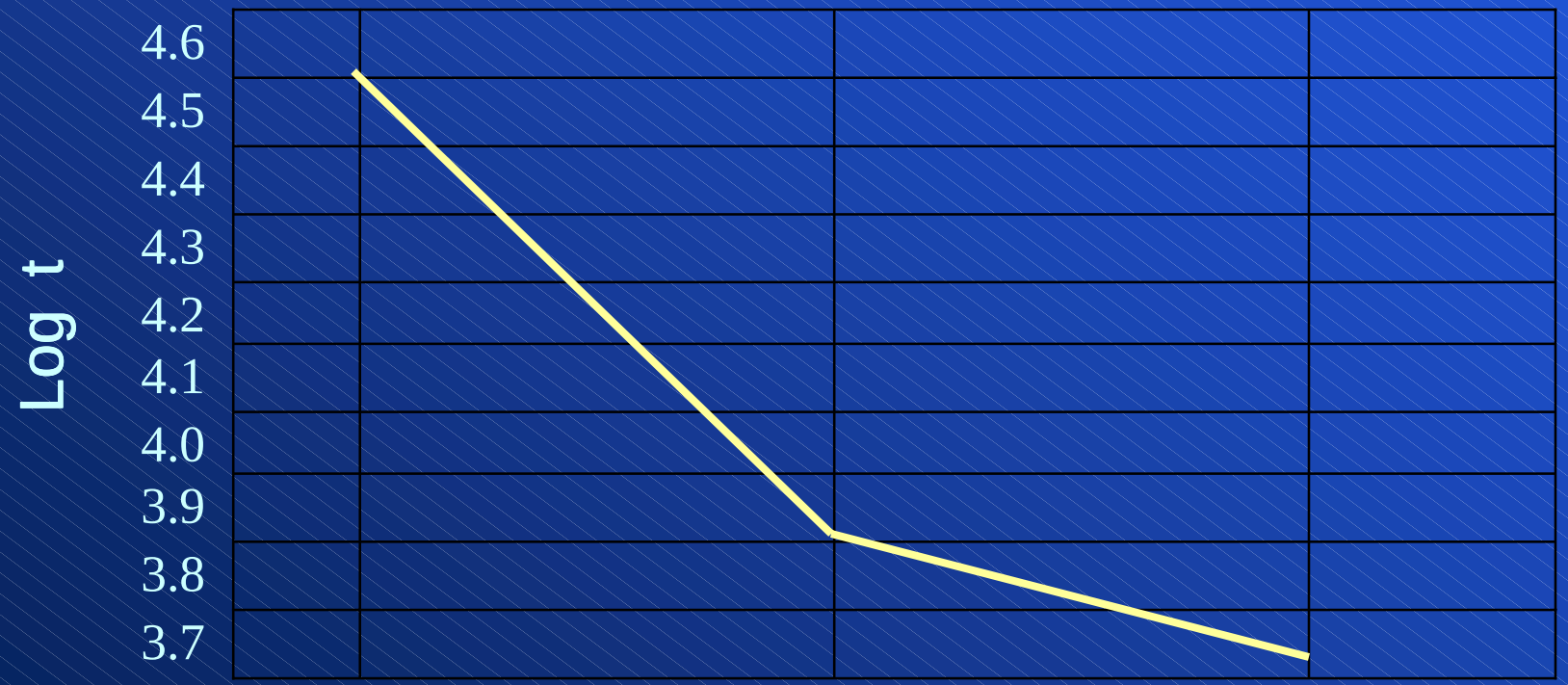
Time needed for completing Vis. task



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COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Picture quality

Results:

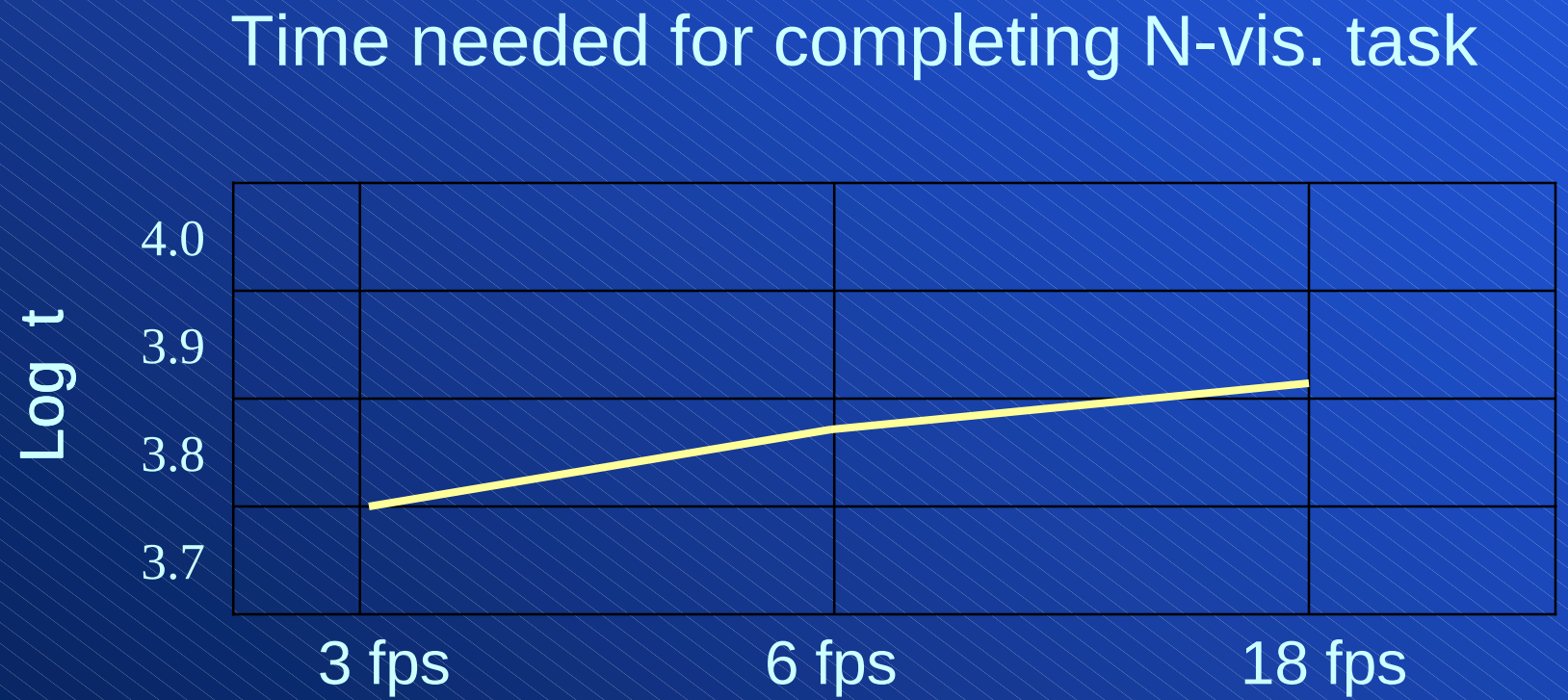
- 3 fps - picture perceived as pretty jerky
- 6,18 fps - picture perceived as slightly jerky.

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Picture quality

Results:

- the frame rate values less than 6 fps decrease videoconferencing effectiveness in case of communication interactions saturated by non-verbal communication signs.

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Picture quality

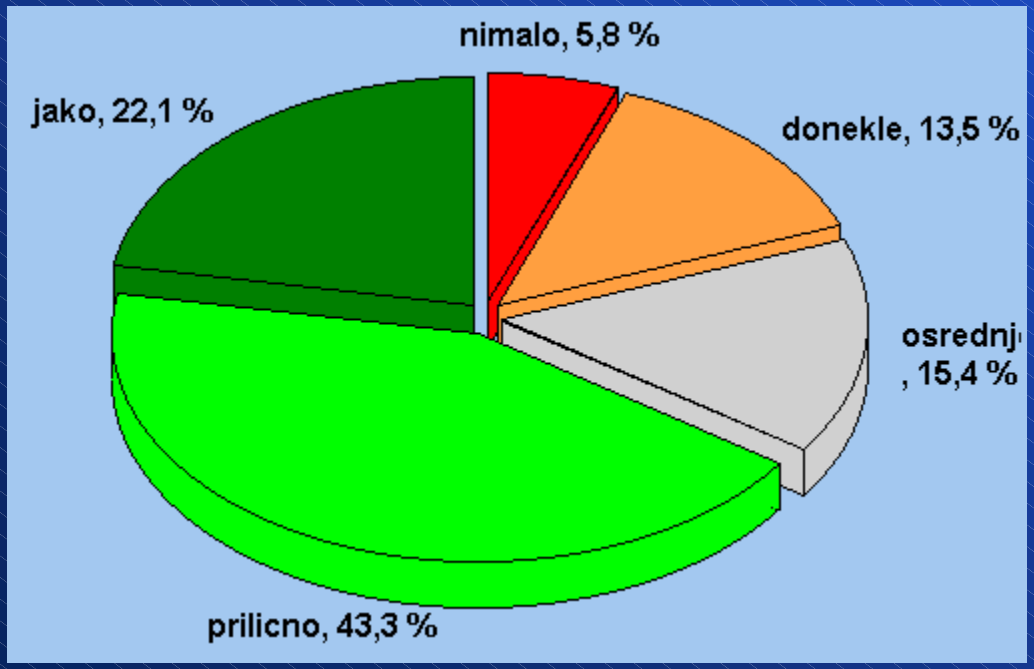


COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Picture quality

	3 fps	6 fps	18 fps	F
facial expression	3.8	4.0	3.9	4.85**
eye-contact	2.4	3.3	2.9	4.67*
picture quality	3.2	3.8	3.9	7.62**
tone quality	4.0	4.2	3.7	3.53*
picture sharpness	3.3	3.7	3.5	1.87

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Initial attitude

How much did you like to communicate by using DVC systems?



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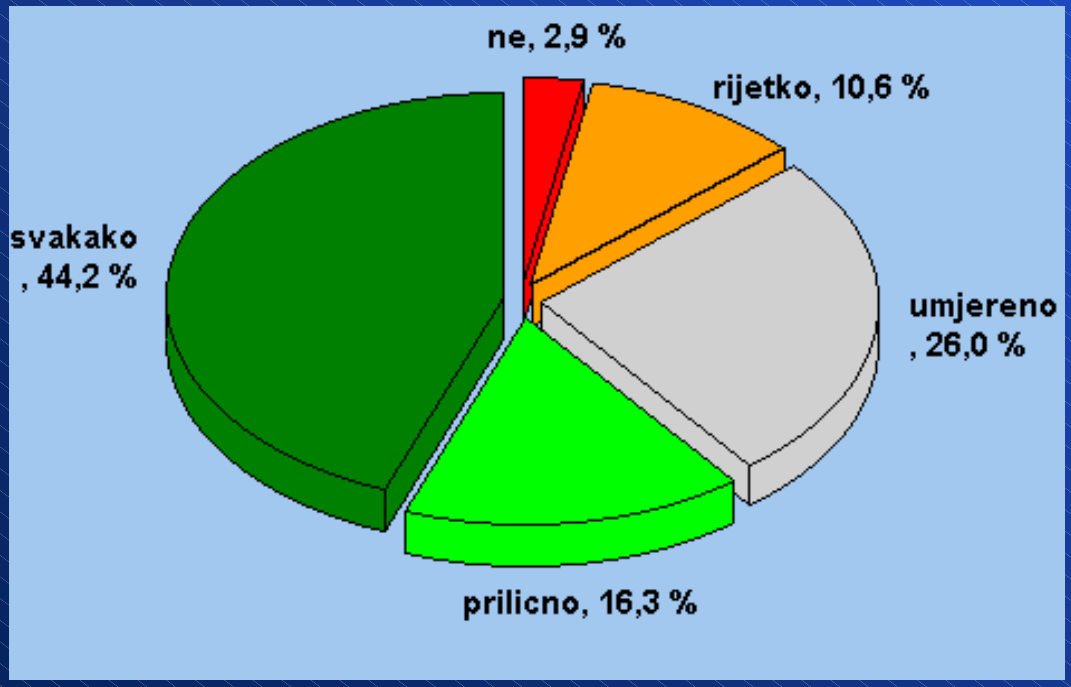
COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Initial attitude

Would you like to use DVC systems in the future?



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COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Initial attitude

The initial general attitude of the students towards videoconferencing is positive.

They like to communicate by using DVC systems and would like to use them in the future.

COMMUNICATION EFFECTIVENES AND SUBJECTIVE ASPECTS OF DVC - Questions

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