

# BILAG til forskningsoversigt

## Effekterne af Cooperative Learning

Set i et voksenundervisningsperspektiv

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## Om NCK

Nationalt Center for Kompetenceudvikling indsamler, dokumenterer og formidler viden om voksen- og efteruddannelse og kompetenceudvikling i offentlige og private virksomheder.

Opgaven løses i et samarbejde mellem medarbejdere fra Danmarks Pædagogiske Universitetsskole, Aarhus Universitet, Anvendt Kommunal Forskning, Videncenter for Uddannelses- og Erhvervsvejledning, Nationalt Videncenter for Realkompetencevurderinger og CARMA, Aalborg Universitet.

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## Introduktion

Dette bilag indeholder analyserne af 22 enkeltstudier og en artikel som refererer til en meta-analyse af 168 studier. Disse danner baggrund for en forskningsoversigt over effekten af Cooperative Learning set i et voksenundervisningsperspektiv.<sup>1</sup> Oversigten indgår som en del af projektet ”Det samarbejdende klasserum”, som gennemføres af VUC Lyngby, VUC Nordsjælland, VUC Frederiksberg og VUC Vestegnen med finansiell støtte fra Region Hovedstaden.<sup>2</sup>

De enkelte studier som er medtaget her giver et billede af den empiriske viden, som findes internationalt om effekten af Cooperative Learning i voksenundervisningssammenhænge. Formålet med den endelige oversigt er at give et overblik over, hvad der virker.

Analyserne her i bilaget samt selve forskningsoversigten er udarbejdet af forskningsassistent Lea Lund Larsen.

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<sup>1</sup> Find oversigten på [www.ncfk.dk/CL](http://www.ncfk.dk/CL)

<sup>2</sup> Læs mere om projektet på <http://vucl yngby.dk>

## Sammenfatning på de gennemgåede studier

Ved en opsamling af de empiriske studier vedrørende effekten af CL inden for voksenundervisningsfeltet ses en overvægt af studier, som rapporterer en positiv effekt af CL i forhold til de voksnes faglige udbytte. En meta-analyse over 168 amerikanske undersøgelser på universitetsniveau viser en positiv effekt ved samarbejdende læringsformer overfor en individualistisk og konkurrenceminded undervisningstilgang. Og 17 ud af de 22 resterende undersøgelser analyseret i nærværende oversigt viser tilsvarende et positivt udbytte. Men samtidigt er det væsentligt at gøre opmærksom på, at der også forefindes studier, som viser det modsatte (5 ud af de 22 undersøgelser). Disse studier gør opmærksom på, at der er mange andre parametre, som spiller ind på, hvorvidt det fungerer for den enkelte at arbejde sammen med andre eller ej. Fx i hvilken udstrækning den lærende værdsætter det at lære, mere end den sociale interaktion, og hvorvidt den lærende ønsker, at andre skal dominere undervisningens faglige diskussioner.

Ser vi på forholdet mellem CL og udviklingen af den interpersonelle dimension og motivationen for at lære viser majoriteten af studierne, at CL har en positiv påvirkning herpå, kun et enkelt studie modbevise dette (Wood, 1992). Dette faktum genlyder fra grundskoleforskningen og kan i en VUC kontekst vise sig at få positiv betydning for fastholdelsesprocenten hos kursisterne.

Endeligt er der ikke målt nogen positiv sammenhæng mellem de lærendes præstationer og deres præferencer for det at samarbejde om læring, når de undervises ud fra CL's principper. Dette modsvarer de mange resultater inden for grundskoleområdet.

Oversigten kan konkludere, at der er forskningsmæssigt belæg for, at CL som undervisningsmetode har en overvejende positiv effekt inden for voksenundervisningsområdet både på de voksnes faglige præstationer og deres interpersonelle kompetencer. Slutteligt skal det nævnes, at eftersom størstedelen af de her gennemgåede studier beskæftiger sig med det videregående uddannelsesniveau bør forsknings- og evalueringspraksis også rette blikket mod efter- og videreuddannelsesområdet i forhold til effekten af samarbejdende læring.

1.

**Forfatter/ årstal:** (Glidden & Kurfiss, 1990)**Titel:** Small-group discussion in Philosophy 101. (cover story)**Udgivelse:** College Teaching**Nationalitet:** USA**Uddannelses område/ niveau:** Universitet, filosofi undervisning.**Udgangspunkt:** The first author is a philosophy professor teaching relatively large sections of his department's introductory course. He wanted to find a way to increase student participation and to help students learn to reason about philosophical questions.

The second author is a psychologist interested in college students' learning and intellectual development. She had often used groups to stimulate participation in her own classes and was familiar with research and practice suggesting the value of collaborative learning methods (e.g., Sharan 1980; Slavin 1980; Webb 1982).

**Forsknings spørgsmål:**

Seek ways to evaluate the effectiveness of small-group methods in an actual classroom.

**Fremgangsmåde og metodologi:**

We began by reviewing students' work in the class that had been videotaped. Analyzing test results, Glidden found that students in the course scored somewhat higher on essay questions covering topics that the professor had taught using group methods. We realized we could not conclude from this result that the group method was superior because the questions on small-group-instructed topics might have been easier, and the professor's knowledge of which topics had been taught by the group method might have biased his scoring.

Therefore we needed to design a more systematic study.

Six philosophical problems were to be solved by small-group consensus with corresponding follow-up exam questions.

1). Our first experiment was designed to test the hypothesis that small-group work on a specific philosophical problem is more effective than lecture as a way to help students learn material that will be tested on an essay examination.

2). In a second study, we tested the hypothesis that small-group work is more effective than lecture for learning material that will be tested on a multiple-choice examination.

Using control groups who were taught in a traditional lecture way.

**Note:** Henviser både til collaborative og cooperative Learning.**Resultater:**

Group work was as effective as traditional lecture in three cases and more effective in two cases.

We were, however, able to examine the effects of the group method on learning as measured by performance on multiple-choice examinations.

The results of these two modest studies do not unequivocally support the hypothesis that group work is superior to the lecture method. Taken together, however, they do offer some reassurance to those who are uncertain whether to take the risks of using small groups. The studies suggest that, in communicating content normally covered on examinations, small-group work is at least as effective as lecturing. Moreover, collaborative learning enhances the course as a whole because it lends variety to learning, encourages participation, and promotes a measure of active thinking among the students. Our work leaves open the important question of whether increased small-group interaction enhances the contribution of philosophy instruction to the development of reasoning skills, a question we hope to pursue in future work.

2.

Forfatter/ årstal: (Prapphal, 1991)

Titel: Cooperative Learning in a Humanistic English Class

Udgivelse: Jaquith, Paul, (Ed.) "Issues in Southeast Asian Refugee Education".

Nationalitet: Thailand

Uddannelses område/ niveau: Der deltog 27 tandlægestuderende som tog et grundlæggende engelsk kursus. 13 af hankøn og 14 af hunkøn.

Udgangspunkt: The paper presents cooperative learning as an effective way to involve EFL students in using English and to make learning more enjoyable. This approach fosters a climate of caring and sharing in the classroom.

Forskningsspørgsmål: I en spørgeskemaundersøgelse blev de studerende spurgt om deres forhold til det at lære engelsk. 18 var positive og 9 udviste ingen interesse i at lære engelsk. Engelskkursets mål er at udvikle de studerendes kommunikative kompetencer og det samme materiale benyttes af alle lærere. Men eftersom de studerende adskiller sig i evner, holdninger, behov, læringsstile og strategier blev kursusmaterialet udviklet til at opmuntre de studerende til at være væsentligt mere deltagende, samarbejdende og generelt set bidragende til kursets succes.

Metodologi: Lærerne tog bl.a. udgangspunkt i Spencer Kagans struktur og kombinerede det med sprogforskeres læringstilgange, hvor samarbejde var i fokus. De studerende modtog point efter korrekt udført opgave og disse point var også betydningsfulde for den enkeltes karakter.

Man evaluerede undervisningsforløbet ved at spørge til de studerendes opfattelser af det at arbejde på en mere samarbejdende måde, som var anderledes fra deres traditionelle oplevelser. Man havde således ikke fokus på at måle en forbedring eller sammenligne med kontrolgrupper om undervisningsformen havde en effekt på det faglige udbytte målt i tests.

Resultater: A study conducted on a English class at the Chulalongkorn University language Institute illustrates how cooperative learning fosters commitment to tasks, and encourages students to work cooperatively, to learn to be problem solvers, to become knowers rather than merely assimilators, and to act as evaluators and assessors. *An informal evaluation of the study indicates the cooperative learning is a promising humanistic approach which increases student participation in EFL classes in the Thai context.* Forfatteren skriver selv i konklusionen at: "It appears to facilitate the learning process both cognitively and affectively", men *det kognitive måles ikke specifikt fx i fagligt præsterede mål.*

De studerende blev bedt om at kommentere på deres oplevelser af gruppeprojekterne. Og generelt set var mange positive tilbagemeldinger, som fokuserede på bl.a. en afslappet atmosfære, mere underunderholdende undervisningsform, engelsk er blevet lettere, samarbejdet gør undervisningen hyggelig og rar. Den eneste negative kommentar til den anderledes undervisningsform var at nogle af opgaverne havde for lidt fokus på indholdet.

3.

Forfatter/ årstal: (Olivas, 1991)

Titel: Using Cooperative Learning to Teach Word Processing.

Udgivelse: Adult Learning, 3

Nationalitet: USA

Uddannelses område/ niveau: Adults learning how to use the software Wordperfect 5.0.

Udgangspunkt: Forfatteren er erhvervsfaglig underviser i data behandling. Han undersøger om CL vil øge undervisningseffektiviteten.

Forskningsspørgsmål: Der er et stort behov for uddannede folk med kompetencer inden for databehandling, hvorfor undervisningen må effektiviseres, hvilket forsøges med CL. "My objective was to see which group would become more competent and consequently better

able to obtain and keep a word processing job”.

**Fremgangsmåde og metodologi:** Henviser til Johnson & Johnsons CL tilgang. All students used the same training material, which consisted of twenty hands-on lessons covering the most frequently used features of word processing. The word processing software used was Wordperfect 5.0.

An assessment of 20 students who learned word processing through cooperative learning was compared to 20 who used an individual learning method. The assessment consists of the time used by the teacher to instruct, the students scores in the tests, and their opinions about CL as a teaching method.

**Resultater:** *The group of cooperative learning students learned faster, needed less teacher assistance, and earned higher scores. Most felt positive about the experience.*

At the conclusion of the class, cooperative learners required an average of about 12 percent less time than individual learners to finish their lessons. The teacher did spend 50 percent less time assisting the cooperative learners.

The cooperative learners earned higher competency scores. On the objective section of the test the average score was 44 for the cooperative learner and 39 for the individual learner.

The cooperative learner scored higher in the hands-on section of the test with an average score of 23, compared to an average score of 19 for the individual learner.

The students’ opinions on the method, positive:

Forkortet:

- Great working with someone else because then you could get an answer right if you had a problem.
- Other students could relate to the same problems as I.
- There was always someone there to show me how to do something if I didn’t know how to.

The students’ opinions on the method, negative:

- Sometimes I just wanted to work by myself but I couldn’t.
- I got tired of waiting for other people.
- I had a hard time keeping up with the others on my team.

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4.

**Forfatter/ årstal:** (Van Voorhis, 1991)

**Titel:** Instruction in Teacher Education: A Descriptive Study of Cooperative Learning.

**Udgivelse:**

Paper presented at the International Convention on Cooperative Learning (Utrecht, Netherlands, July 1992).

**Nationalitet:** USA

**Uddannelses område/ niveau:** College level in teacher education

**Forsknings spørgsmål:**

College teaching and learning were studied with respect to students' preferences for learning and motivation as they relate to various instructional methods used in teacher education.

The purpose of the study was to describe elementary and secondary education majors’ learning as it relates to instruction in a preservice teacher education course.

**Fremgangsmåde og metodologi:**

This study examined the effects of small-group instruction on student attitudes, preferences for instruction, and motivation during assigned tasks related to the methods course.

The study was designed to discover the relationship of students’ attitude to gender, major, high school grade point average, and the preference for individualistic, competitive, or cooperative structures.

A traditional lecture format and the cooperative group discussion teaching method were compared within a specific college population. Participants (N=20), students enrolled in an undergraduate curriculum and instruction

course, completed the Learning and Study Strategies Inventory (LASSI), which measures students' attitudes and motivation, and the Learning Preference Scale: Students (LPSS), which determines cooperative, competitive, or individualistic preferences for learning. Comparisons were utilized to describe relations to gender, high school grade point average, college major, and the LPSS and LASSI scores. The technique of ethnographic interviews further addressed research questions.

**Resultater:** The data showed that: cooperative learning at the college level in teacher education yielded positive outcomes for students of different genders, academic ability, college majors, and previous instructional experiences who studied together in the same course; and students' interest in the material, use of language in learning the material, and an active pursuit of learning were enhanced by structuring cooperative groups.

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5.

**Forfatter/ årstal:** (Hufford, 1991)

**Titel:** Increasing Academic Performance in an Introductory Biology Course

**Udgivelse:**

BioScience, Vol. 41, No. 2 (Feb., 1991), pp. 107-108

**Nationalitet:** USA

**Uddannelses område/ niveau:** The introductory biology course for science majors at George Washington University

**Udgangspunkt:** Concern about the poor performance of Afro-American students in an introductory biology course for science majors led me several years ago to explore how the problem could be corrected. (Result: The changes subsequently made in the course increased academic performance across the entire range of students).

**Forsknings spørgsmål:**

Man vil undersøge om man kan højne de lave karakterer særligt for afro-amerikanere ved at benytte en anderledes undervisningstilgang.

Først undersøger man det ved at lede efter objektive forhold såsom uddannelsesbaggrund, køn, tilgængelige karaktere, sportstilknytning på fakulterne o.lign. da der ingen signifikans viser sig forsøger man CL som undervisningsform.

**Fremgangsmåde og metodologi:**

Between 1978 and 1988, grades in the course were relatively low. There was no significant difference between male and female performance during these years. The average grade for the fall semester of the course was a C, less than 9% of the students earned an A, and approximately 15% failed the course. Among the Afro-American students, more than half received grades of F.

In the fall semester of 1988, the course was modified. The single lecture section was divided into two sections of 50 to 75 students. I wrote and distributed guides to effective study and test-taking. The laboratories were opened for two hours in the evening under the supervision of two undergraduate teaching assistants. Collaborative study by small groups of students was encouraged by the redesign of laboratory exercises, with more emphasis on experiments. The exercises were divided into sets of activities, and groups of four students performed portions of the total investigation. Students within each small group had to cooperate in their task and then exchange results with other groups. Finally, each small group discussed the implications of the data collected.

The students were encouraged to form informal cooperative learning groups outside the classroom. An estimated 35% of the students participated in such groups; an exact measure was not possible because students moved into or out of groups during the semester.

**Resultater:**

In the first two fall semesters during which these modified procedures were followed, there was a significant increase in grades. Although the tests were not significantly different year to year in degree of difficulty and the grading scale remained the same, the number of students receiving grades of A increased to more than 20%, and less than 3% received failing grades. Both men and women improved, and less than 0.5% of Afro-Americans failed.

Derud over viste observationer af gruppearbejdet at: We observed gender differences in how students perform in small groups. In general, women were more likely, at least initially, to feel uncomfortable with the laboratory work group. When the group included a man, he typically assumed the dominant role.

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6.

Forfatter/ årstal: (Carroll, 1991)

Titel: Improved Interpersonal Relationships: A Result of Group Learning

Udgivelse:

Journal of Business and Technical Communication, 1991; 5; 285

Nationalitet: USA

Uddannelses område/ niveau: University. Written business communication

Udgangspunkt: Many teachers believe that lecture combined with individual writing assignments is the best method for teaching written business communication. In contrast, a second teaching method is the random assignment of students in written communication classes to cooperative learning groups.

Forsknings spørgsmål:

The author recently completed a study at Oklahoma State University comparing the effectiveness of straight lecture and cooperative learning group methods of teaching junior and senior college-level written business communication.

Fremgangsmåde og metodologi:

The study follows the students in their 16-week semester.

No attempt is made to present the study, it is more like a guide. Suggestions and procedures for effectively structuring and implementing cooperative learning groups, including copies of handouts, are provided to encourage instructors to foster cooperative learning in written business communication.

Resultater:

Comments on diary sheets by students in cooperative learning groups indicated maturation in the area of interpersonal relationship skills—an unanticipated aspect of the study.

The instructor observed that students in the cooperative learning groups demonstrated enhanced interpersonal and collaborative skills; therefore, a strong case is established for using this method of teaching in written business communication classes.

Providing students the opportunity to write business communication assignments in cooperative learning groups for a group grade demands interaction, collaboration, and cooperation from each individual. The demands placed on cooperative learning groups lead to the development of group dynamics and interpersonal relationship skills that are important in the workplace.

Therefore cooperative learning group method is recommended for teaching written business communication because it provides students an opportunity to learn to work cooperatively and share ideas in groups.

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7.

Forfatter/ årstal: (Wood, 1992)

Titel:

The Application of Computer Technology and Cooperative Learning in Developmental Algebra Community College

Udgivelse:

Paper presented at the Annual Computer Conference of the League for Innovation in the Community College (9th, Orlando, FL, October 21-24, 1992).

Nationalitet: USA

Uddannelses område/ niveau: Two Year Colleges

Forsknings spørgsmål: In fall 1991, a study was initiated at Central Florida Community College (CFCC) in Ocala to examine the effects of computer lab tutorials and cooperative

learning on mathematics achievement, retention rate, mathematics anxiety, mathematical confidence, and success in future mathematics courses among 29 students in an intermediate algebra class.

**Fremgangsmåde og metodologi:**

Another course section of 23 intermediate algebra students, taught by the same instructor but utilizing the traditional lecture method, served as a control group. The experimental section was divided into groups of two to four students having similar achievement placement test scores. Homework assignments, computer lab tutorials, and all tests (except for the final exam) were completed on a group basis, with issues of assignment and lab meeting times, group participation guidelines, and class attendance decided and monitored by the group. Both classes were given the Fennema-Sherman Mathematics Anxiety and Confidence Scales test before and after the course.

**Resultater:** Study findings included the following:

- (1) a total of 23 students in the experimental group, and 15 students in the control group completed the course.
- (2) The control group showed greater increases in post-course confidence ratings and greater reductions in anxiety ratings than the experimental group.
- (3) 69% of experimental group students received a course grade of A, B, or C, as compared with 52% of the control group.
- (4) 87.5% of control group students were successful in their subsequent math course compared to 80% of the experimental group students.

Though the written evaluations by students in the experimental group shows that they liked the cooperative approach very much it does not influence the anxiety ratings extremely and also not the comparison with the control group in subsequent courses. (Wood, 1992)

8.

**Forfatter/ årstal:**

Courtney, Daria Paul; And Others (1992)

**Titel:** The Effect of Cooperative Learning as an Instructional Practice at the College Level.

**Udgivelse:** Paper presented at the Annual Meeting of the Mid-South Educational Research Association (Knoxville, TN, November 11-13, 1992).

**Nationalitet:** USA

**Uddannelses område/ niveau:**

Teachers enrolled in a graduate statistics course.

**Forsknings spørgsmål:**

The purpose of this study was to determine the effects of cooperative learning on the attitude and achievement of teachers enrolled in a graduate statistics course.

**Fremgangsmåde og metodologi:**

Thirty students received instruction from a faculty member fully trained in cooperative learning methodology. A nine-item survey was administered at the conclusion of the course. Responses were tallied as either positive or negative on factors related to cooperative learning techniques used throughout the semester. Examination scores were compared to those of a comparable group of students taking the same course with another instructor using traditional lecture methods.

**Resultater:**

Results of the survey indicated that 96 percent of the students felt increased support and a reduction in anxiety. Students also felt their comprehension of statistics was augmented by participation in group exercises. T-tests performed on examination scores revealed no significant differences between the two classes.

**Fagligt udbytte:** Despite the fact that significant differences in achievement were not evidenced between the two teaching methodologies...

**Socialt udbytte:**

... the qualitative data suggest that cooperative

learning techniques positively influenced student motivation, self-efficacy, level of anxiety, and sense of social cohesiveness. Contains 20 references.

(Courtney, 1992)

9.

**Forfatter/ årstal:** Cole, Barbara C.; Smith, Denie L. (1993)

**Titel:** Cooperative Learning Strategies for Teaching Adult Business English.

**Udgivelse:** Journal of Education for Business, Jan/Feb93, Vol. 68( Issue 3, ), 4p.

**Nationalitet:** USA

**Uddannelses område og niveau:** The study was conducted with 58 students enrolled in a 1-year business education training program at a technical institute.

The students ranged in age from 18 to 55 and had either a high school diploma or a general education development diploma (G.E.D.). All except two students were female, and 14% were from minority groups.

**Forskningsspørgsmål:** Presents a study which tested the hypothesis that the achievement of adult students who participate in cooperative learning groups in business English will be superior to the achievement of students who learn solely through teacher-directed methods. (Henviser til Johnson & Johnsons samt Slavins fremstilling af Cooperative Learning).

**Metodologi:** The 58 students were randomly assigned to three classes: two experimental groups and one control group. The same teacher taught all three classes, and the classes met on Mondays and Wednesdays for 2 hours each day (at 8:00 a.m., 10:00 a.m., and 1:00 p.m.) for 15 weeks. Tests were given on Fridays

**Resultater:** Analysis of pretest and posttest scores showed *no significant differences in the achievement* of 58 adult students in cooperative learning groups in business English compared to that of students who learn through

teacher-directed methods. *A stronger spirit of participation, cooperation, and helpfulness was observed among group members in the experimental classes.*

Though some friendships developed in the control group, too, and undoubtedly some students studied together, the degree of friendship and cooperation among students did not appear to be nearly as great as in the experimental classes.

Of the 33 students in the experimental classes, 16 (49%) expressed positive opinions about the group learning. Only 7 (21%) expressed purely negative comments. (Cole & Smith, 1993)

10.

**Forfatter/ årstal:** (Lowry, 1994)

**Titel:** Collaboration as an Instructional Innovation.

**Udgivelse:** Paper presented at the The National Convention of the Association for Educational Communications and Technology.

**Nationalitet:** USA

**Uddannelses område/ niveau:** The study was conducted in a graduate-level class on technology for teachers. The class was composed of 10 current and preservice teachers, three men and seven women. Et tre-timers kursus hvor man mødtes en gang om ugen 15 gange i semesteret.

**Udgangspunkt:** A preliminary study examined how collaboration could be successfully incorporated as an instructional strategy in a class of adult learners.

**Forskningsspørgsmål:** The principal content of the class was how to select, design, and use instructional technology in the elementary and secondary classroom. The use of collaboration was considered technologically competent, and training the class in collaboration was the objective.

**Fremgangsmåde og metodologi:** Man observerede at kursusedtagerne havde en del modstand overfor samarbejde som den drivende arbejdsform, eftersom de ikke havde den store erfaring i det, nok havde de viden om samarbejde, men den praktiske afprøvning var ny for dem. Disse observationer resulterede i at man ændrede kursen og tænkte nu ikke kun samarbejde som en teknisk undervisningsstrategi, men også som en innovation, og her benyttede man Everrett Rogers arbejde, som gjorde det muligt at forstå og se dynamikkerne i de samarbejdende processer.

Der henvises bl.a. til Johnson og Johnson samt Kagan tilgang til CL, til trods for forfatterne kalder det collaborative learning.

**Resultater:** Examining how the class reacted to collaboration with regard to the model of dissemination of innovation by Everett Rogers resulted in the development of a checklist of ways to structure a conversation with learners so that concerns about the innovation of collaboration can be addressed.

**OBS:** Studiets fokus ligger lidt uden for dette reviews fokus på effekten af CL som en undervisningsform, men de data der kan benyttes i denne sammenhæng er: at man må tage højde for at der vil forekomme en del barriere ved implementeringen af samarbejdende læring. Så såfremt CL skal kunne implementeres og læres som en undervisningsform der skal kunne realiseres af læreren selv, må man tage højde for disse barrierer og her kan det vise sig givtigt at inddrage en teori om diffusion af Rogers, som ligger op til spørgsmål vedrørende den innovation man som underviser ønsker at sætte i værk.

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11.

**Forfatter/ årstal:** Berg, Kathleen F. (1993)

**Titel:** Structured Cooperative Learning and Achievement in a High School Mathematics Class.

**Udgivelse:**

Paper presented at the Annual Meeting of the American Educational Research Association (Atlanta, GA, April 1993).

**Nationalitet:** USA, university af Hawaii.

**Uddannelses område/ niveau:**

High Schools – 11th grades in an algebraII/ Trigonometry class.

**Forsknings spørgsmål:**

This study of college-bound 11th graders assessed the feasibility and effectiveness of instruction that used a structured cooperative learning technique.

**Fremgangsmåde og metodologi:**

The students worked in dyads with scripts that contained two learning situations with two roles: (1) explainer and checker; and (2) solver and checker. Both students then worked on summary questions and homework. Verbal interaction influenced learning and appeared to be a mediator of the effects of student characteristics on achievement.

Specifically, the study focused on two questions: (1) Can an effective program using dyadic studying techniques be designed for a high school course in higher mathematics; and (2) When high school students are trained to use a dyadic studying strategy for learning from their text, what is the nature of their verbal interaction and does this interaction change over time?

Two groups were compared using the same texts, tests, and teacher. Both questions were answered affirmatively and supported statistically.

**Resultater:**

The study concluded that:

(1) students can be expected to respond positively to the experience and to work cooperatively and productively together. (2) 94% of the time students had on-task interaction. (Berg, 1993)

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12.

**Forfatter/ årstal:** Wilson, Charles E. 1996

**Titel:** The Effects of Cooperative Learning and Teaching Strategies on Student Achievement

with Implications for Faculty In-Service Education.

**Udgivelse:** Dissertation paper.

**Nationalitet:** USA.

**Uddannelses område/ niveau:**

Two Year Colleges

**Forsknings spørgsmål:**

A study was conducted at Kansas City Kansas Community College to determine if cooperative learning strategies were effective in improving teaching quality and enhancing the learning process of students in social science courses in general and in entry-level sociology and psychology classes specifically.

A review of the literature provided considerable evidence in support of cooperative learning as a viable educational strategy for college instruction.

**Fremgangsmåde og metodologi:**

Outcomes were then compared for four courses: an entry-level sociology and an entry-level psychology course using cooperative learning strategies and control entry-level sociology and psychology courses using more traditional methods. The experimental courses involved small group learning activities, such as discussions, problem solving, and study reviews, while the traditional teaching methods used in the control groups included lectures, question and answer sessions, and text-book/study guide reviews.

**Resultater:**

An analysis of final course grades for the 50 students completing cooperative learning sections and the 100 completing control sections found no significant differences in grades, suggesting that cooperative learning was not more effective than traditional methods.

However, based on student comments on course evaluations, students tended to respond positively to the cooperative learning methods that they experienced. Contains 85 references. Comments from students in cooperative learning sections are appended. (TGI).

Mere uddybet fra conclusions:

The results of this study did not show a significant difference between the cooperative learning strategies groups and the traditional learning strategies groups. Perhaps cooperative learning strategies may work better in some learning situations at the college level, but no evidence existed to say that it was better than more traditional learning methods. Certainly cooperative learning strategies provide more of an opportunity for students to engage one another, get to know one another, develop interpersonal and small group skills, and perhaps even enhance higher order thinking skills. However, none of these benefits alone, suggested that it was a better method than more traditional ones. The comments from students involved in this study did not support a conclusion that cooperative learning strategies promoted achievement at a higher level than traditional learning strategies. (s.87)

(Wilson, 1996)

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13.

**Forfatter/ årstal:** Janina A. Mele (2001)

**Titel:** Kagan Cooperative Learning Creates Explosive Results in High School Chemistry

**Udgivelse:** Kagan Online Magazine(Summer).

**Nationalitet:** USA

**Uddannelses område/ niveau:** Gymnasium, kemi undervisning.

**Udgangspunkt:** The author took as a part of her school district's staff development program, she was selected to become an on site trainer. One focal point of instruction was Cooperative Learning. Janina A. Mele has been teaching for the past 30 years. She currently teaches graduate courses in cooperative learning in New Jersey.

**Forskningsspørgsmål:** After spending a week in California training with Dr. Spencer Kagan, the teacher was excited about what she learned, eager to try these new methodologies in her class, but very skeptical that they would actually work with high school Chemistry students.

**Fremgangsmåde og metodologi:** The Class used several structures as the mainstays of instruction: Think-Pair-Share, (later revised to Timed-Pair-Share), Numbered Heads Together, RoundRobin, RoundTable, RallyRobin, RallyTable, Pairs-Compare, and Pairs Check. Much to my surprise, the students were really working as a team, staying on task, developing good relationships, but most of all showing excitement about Chemistry. "As I walked around the lab offering help, I stepped back a moment and just looked at my students. All 24 of them were actively engaged in chemistry!"

"The nature of chemistry requires a good deal of direct instruction, but every 10 to 15 minutes I inserted a structure, which required my students to think and recall. These activities lasted 5 to 10 minutes. We also spent longer periods of time working mastery structure like Pairs Check and RallyTable. A new routine was soon established and we developed a good pattern and flow of information and dialogue. *I also found my questioning skills as well as my students thinking skills improving.* This was leading to a relaxed and fun learning environment."

"My role of teacher kept evolving and my class was definitely becoming more *student centered*".

**Resultater:** In one class a total of 17 A's out of 21 students, a class average of 90 %. My other class had an average approaching 83 %. This was unheard of. Compared to the grades from the previous year my present class/students were actually doing much better scholastically.

The grades from the previous year the class average consistently hovered at 75 %. This year, with one exception, my classes were averaging well above 80%.

These grades, for both years were based on comprehensive assessments, which included: homework, quizzes, lab reports, unit tests, and research papers. Although the basis for assessment was virtually the same, the method of instruction was different.

Using CL had led to a significant improvement in scholastic success.  
(Mele, 2001)

14.

**Forfatter/ årstal:** Anthony, J. Onwuegbuzie (2001)

**Titel:** Relationship between peer orientation and achievement in cooperative learning-based research methodology courses,

**Udgivelse:** Journal of Education Research, 1.

**Nationalitet:** USA

**Uddannelses område/ niveau:** Universitets studerende der tager kursus i metodologi

**Udgangspunkt:** A paucity of studies have been undertaken in the area of cooperative learning at the graduate level. Even less formal investigations have been conducted in the field specifically with respect to educational research courses, despite the following facts: (a) The overwhelming majority of graduate students in colleges of education are required to enroll in at least one research methodology course as a necessary component of their degree programs (Onwuegbuzie, 1998); (b) the majority of students find these courses the most difficult in their programs of study (Onwuegbuzie, 1997); and (c) in recent years, there has been an increase in the number of research methodology instructors who use cooperative-learning techniques in their classes (Onwuegbuzie and DaRos, in press).

**Hypotese:** The relationship between cooperative-learning orientation and performance in educational research courses found previously (Onwuegbuzie and Daley, 1997b) would disappear when cooperative-learning techniques were implemented.

**Forskningsspørgsmål:** The purpose of the present study was to determine whether the relationship between peer orientation and achievement remained in research methodology courses in which cooperative-learning (Johnson & Johnson) groups were formed to undertake major course requirements.

**Metodologi:** Participants constituted 159 students from a number of disciplines (e.g., early childhood education, elementary education, middle grades, secondary education, speech-

language pathology, and psychology) who were enrolled in seven sections of a graduate-level research methodology course at a southern university for two semesters. Participation was voluntary, but students were required to give their permission by signing an informed consent document. They received extra course credit for their participation. All surveys were coded using student identification numbers to maximize confidentiality. The ages of the participants ranged from 22 to 55 ( $M = 32.4$ ,  $SD = 8.5$ ), with a mean GPA (based on graduate courses) of 3.67 ( $SD = .39$ ). The majority of the sample was female (89.9%). With respect to ethnicity, the group comprised Caucasian Americans (98.1%) and African Americans (1.9%).

*Settings:* According to the university graduate handbook, the course involved the "application of scientific method to educational research, including nature of research problems in education, theory of research, experimental design, techniques in data gathering, the interpretation of results, research reporting, and bibliographical techniques." *Each semester lasted 16 weeks; classes were held for 3 hr once per week.* A major requirement of the course was the completion of a research proposal. The objective of the proposal was to prepare students thoroughly to write proposals for dissertations and for seeking external funding. As such, the research proposals provided authentic assessment.

Another major requirement that was undertaken by cooperative-learning groups involved a written critical evaluation of a published research report (article critique). The major goal of the article critique was to allow students to practice evaluating published research articles using scientific principles. To prevent students from procrastinating, they had to select several potential articles to critique and to bring them to the second class meeting for the instructor's advice as to their appropriateness. Furthermore, students were required to make their final selection as to which article to critique by the third week of the semester. The article critiques provided performance assessment.

*Begrænsninger ved metoden:*

A few limitations of the present inquiry are worthy of mention. First, the fact that the results were obtained from a relatively small, nonrandom, geographically limited sample of students seeking graduate degrees poses a threat to external validity. That is, the extent to which the results are generalizable to other graduate students enrolled in research methodology courses is not clear. Second, the lack of qualitative information in the current investigation limited the ability to explain the relationships that were discovered. In any case, because findings stem from a correlational research design, it is beyond the scope of this study to determine whether any of the above relationships represent causal ones. That determination should be a goal of future research.

*Resultater:* Findings revealed a small but statistically significant relationship between peer orientation and achievement ( $r = -.16$ ,  $p < .05$ ). Specifically, students with a peer orientation attained lower levels of achievement than did those who did not have an orientation toward cooperative learning. Squaring the correlation coefficient revealed that peer orientation explained 2.6% of the variance. Although that relationship was statistically lower ( $p < .05$ ) than the corresponding relationship reported by Onwuegbuzie and Daley (1997b), the fact that the relationship may still be nontrivial warrants further research.

I used the Bonferroni adjustment to maintain a 5% Type I error rate so that peer orientation was related statistically significantly ( $p < .05$ ) to the following learning modalities: motivation ( $r = -.27$ ), responsibility ( $r = -.36$ ), authority orientation ( $r = .39$ ), multiple perception orientation ( $r = -.62$ ), and mobility ( $r = -.32$ ). Specifically, students who were more peer oriented tended to report lower levels of motivation, to be less responsible, to have less positive attitudes toward the presence of authority figures in the classroom, to be less inclined to have multiple perception preferences, and to require mobility in learning environments. Using Cohen's (1988) criteria, the correlations represented moderate to large effects.

Thus, it is likely that peer-oriented students who underachieve in research methodology courses do so not only because they are unsuited to traditional, individual methods of

instruction but also because they possess learning styles that do not maximize their learning in the classes.

(Onwuegbuzie, 2001)

15.

Forfatter/ årstal: (Major & Robinette, 2004)

Titel: Kagan Structures Add Power To Corporate Classes

Udgivelse:

<http://www.kaganonline.com/KaganClub/index.html>

Nationalitet: USA

Uddannelses område/ niveau:

The local staff of the United Auto Workers, Local 933 in Indianapolis, Indiana. The classes taught include (but are not limited to):

- Basic Math Skills
- Computer Numeric Control (CNC) Mathematics
- Metrics
- Engineering Drawings
- Coaching Skills
- Leadership-The Role of the Individual
- Plus a variety of technical and HR skills

Udgangspunkt: The authors are part of General Motors Powertrain Division and we work on the local staff of the United Auto Workers, Local 933 in Indianapolis, Indiana. Most school busses have an Allison automatic transmission. We also make transmissions for the M1 Abrams tank. There's a lot riding on Allison Transmissions: Our nation's school-children ride on our transmissions; so too do our soldiers. So as corporate trainers, we take our responsibilities very seriously.

Forsknings spørgsmål:

Der er ikke noget egentligt forskningsspørgsmål. Men de skriver: We have sought out the most effective ways to train our corporate content. We've come across Kagan Structures.

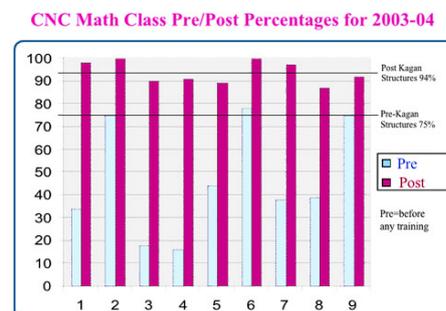
Fremgangsmåde og metodologi:

We now have students working in pairs mostly because we have very small classes. Six students would be a large class for us. The Kagan

Structures work best in larger classes, but we have found they work well in our smaller classes too. Our students enjoy having a class partner to work with because with adults there is still that stigma of not knowing an answer in front of the whole class and teacher. The structures allow them to partner up with each other in a similar fashion to how they need to team up on the manufacturing floor to work through problems and come up with acceptable solutions.

The graph below illustrates the difference in the pre- and post-test scores for the CNC Math class for 2003-04. The numbers 1-9 at the bottom represent 9 different classes. The blue bars are the pre-test scores; the maroon bars indicate the post-test scores. The line at the 75% mark indicates average class scores prior to implementing Kagan Structures. We struggled to get our students to this 75% level.

We require a 90% on our post-test scores in our classes. As you can see by the maroon post-test scores, we have consistently made our 90% with an actual average of 94%.



Our test scores have gone up considerably with the use of structure in our classes. Let me tell you Engineering Drawings is boring. CNC Math is boring if you do not incorporate the structures.

Resultater:

Since implementing Kagan in our classes, we have seen nearly a 20% increase in test scores coupled with increased engagement in the class and enthusiasm for the content.

By using the structures, students are much more involved in the learning process. When we have ownership in something it has a lot more meaning to the individual.

16.

**Forfatter/ årstal:** Dawson, Hancock (2004)**Titel:** Cooperative Learning and Peer Orientation Effects on Motivation and Achievement.**Udgivelse:** Journal of Educational Research; Jan/Feb2004, Vol. 97 Issue 3, p159-166, 8p.**Nationalitet:** USA**Uddannelses område/ niveau:** Universitets studerende.**Udgangspunkt:** The effects of graduate students' peer orientation on achievement and motivation to learn with cooperative learning strategies while enrolled in a 1-semester educational research methods course were investigated.**Forskningsspørgsmål:** One purpose of the present study was to clarify the inconsistencies in research at the higher education level that related to the impact of cooperative-learning environments and students' peer orientations on student achievement in the classroom. To enhance understanding of situational and personality factors that affect higher education students' motivation, I also explored the influence of cooperative-learning classrooms and students' peer orientations on student motivation to learn.**Fremgangsmåde og metodologi:**

During 15 weekly lessons (2 hr and 50 min each), 52 students with high and low peer orientation were exposed to cooperative-learning instruction that involved face-to-face promotive interaction, positive interdependence, individual accountability enforced by group members, collaborative skills, and group processing (Johnson &amp; Johnson). At the end of the course, the students' achievement and motivation levels were assessed.

**Design:** Employing a quasi-experimental design, I found that the independent variable in this study was students' peer orientation (high or low) as determined by the Learning Style Inventory-2nd Edition (LSI-2; Kolb, 1985,

One uses those scores to classify a respondent into one of four learning-style types--diverger (CE and RO), assimilator (RO and AC), converger (AC and AE), or accommodator (AE and CE). Because they prefer to work in groups and to learn by talking to others, divergers and accommodators may be classified as having high peer orientation. Conversely, because they prefer to work alone and with things rather than people, assimilators and convergers may be classified as having low peer orientation. The first dependent variable was student achievement in a graduate-level course in educational research methods as measured with a professor-made, criterion-referenced final examination. The second dependent variable was student motivation to learn as assessed with the motivation section of the MSLQ (Pintrich et al., 1991) and two additional items. I calculated independent samples t tests to determine whether students with high or low peer orientation differed significantly with respect to achievement and motivation. Furthermore, I used techniques of qualitative research analysis (Wolcott, 1994) to evaluate systematically students' narrative responses to the two items regarding what they liked and disliked about the course.

To ensure treatment fidelity, two outside experts reviewed the lesson plans incorporating the cooperative-learning strategies and concluded that they supported Johnson and Johnson's (1999) cooperative-learning characteristics. In addition, one expert unobtrusively observed Lessons 4 and 12 and concluded that they were conducted in accordance with their respective lesson plans (videotaped).

**Resultater:** Differences in the achievement of students with high and low peer orientation were not statistically significant.

However, students with high peer orientation were significantly more motivated to learn than were students with low peer orientation.

Means, standard deviations, and sample sizes for the achievement and motivation levels by peer orientation groups are reported in Table 1. The independent samples t test comparing the achievement levels of students with high and low peer orientation was not statistically significant  $t(50) = 1.03, p = .311$ . Students with

high peer orientation did not score differently in achievement ( $M = 84.78$ ,  $SD = 7.46$ ) than did students with low peer orientation ( $M = 82.76$ ,  $SD = 6.76$ ); effect size was .27. However, the independent samples t test comparing the motivation levels of students with high and low peer orientation was statistically significant,  $t(50) = 2.06$ ,  $p = .045$ . Students with high peer orientation were significantly more motivated to learn ( $M = 5.04$ ,  $SD = 1.33$ ) than were students with low peer orientation ( $M = 4.31$ ,  $SD = 1.23$ ); effect size was .55.

*De studerendes svar på det at blive undervist ud fra CL:* "likes" were (a) opportunities to interact with classmates about the course material, (b) applications of the course material to real-world situations, (c) overall climate of the course that was conducive to learning, and (d) professionalism and trust displayed toward students by the professor. The most frequently cited "dislikes" were (a) tendency of some students to control classroom activities and/or dominate small-group discussions, (b) some students' refusal to contribute to group efforts while others contributed excessively to group activities, and (c) lack of the professor's influence over classroom activities.

*The author points out in the conclusion:*

**Omkring achievement:**

Unfortunately, the results of this study do not clarify previous research in higher education settings regarding the impact of cooperative-learning environments and students' peer orientations on student achievement in the classroom. Graduate students who desire to work with others do not necessarily learn more in settings that foster student interaction and collaboration. Other variables, such as the extent to which students value learning more than social interaction and whether students allow others to dominate classroom discussions of course material, seem to influence graduate students' achievement as much as peer orientation.

**Omkring motivation:**

Conversely, this study offers an important contribution to educators' understanding of factors that influence graduate students' motivation to learn. Specifically, peer orientation was an important determinant of student moti-

vation in the classroom. Students who desired to work with others seemed to be more motivated to learn in settings that maximized student interaction than were students who desired to work alone.

(Hancock, 2004)

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17.

**Forfatter/ årstal:** Schmidt, Jens Ejbye (2006)

**Titel:** Bedømmelse af gruppearbejde i forbindelse med brugen af Cooperative Learning som undervisningsmetode.

**Udgivelse:** Dansk Universitetspædagogisk Tidsskrift 1, 33-37.

**Nationalitet:** Danmark

**Udgangspunkt:** Artiklen beskriver et udviklingsarbejde, hvor underviseren benytter Cooperative Learning og hvor der er en klar sammenhæng mellem læringsmål og undervisningsform, samt hvordan de studerende i denne sammenhæng bliver bedømt. Bedømmelsen gælder både deres faglige niveau, samt mere generelle ingeniørkompetencer.

**Uddannelses område/ niveau:** Ingeniørstudiet, Danmarks tekniske universitet/DTU.

**Forskningsspørgsmål:** Formålet med kurset er at: Den studerende forventes efter afsluttet kursus at have erhvervet dybtgående teoretisk forståelse for biologiske, kemiske og fysiske processer, som anvendes ved rensning af spildevand. Desuden erhverves kendskab til dimensionering af rensningsanlæg. Den studerende skal gennem casearbejdet også udvikle generelle ingeniørkompetencer.

**Fremgangsmåde og metodologi:** Kurset og undervisningsformen er benyttet igennem 6 kursusforløb med i alt 289n studerende, antallet af studerende på kurserne har været fra omkring 18-75 studerende. Udviklingsprojektet har haft tilknyttet en følgegruppe af studerende, som har diskuteret udviklingsarbejdet og underviseren har sammenlignet eksamensbesvarelserne med læringsmålene før og efter indførelsen af CL.

Det nye er at gruppearbejdets produkt (2 cases fra undervisningen vedlægges til den endelige skriftlige 4 timers eksamen) indgår som en del af den karakter den enkelte studerende opnår for den samlede præstation – 4 timers skriftlig eksamensform om rensning af spildevand.

Der henvises bl.a. til Johnson & Johnsons samt Slavins tilgange til CL, og læreren gør et stort forarbejde forud for sammensætningerne af grupperne. Grupperne dannes på baggrund af et spørgeskema, de studerende udfylder om deres faglige og personlige baggrund. Skemaet indeholder spørgsmål om den studerendes studieformål, gennemsnitskarakter, personlige data som køn, alder og nationalitet, fritidsinteresser, tider hvor de ikke har undervisning, en lang række faglige spørgsmål for at afklare deres kompetencer samt spørgsmål om deres læringsstil. Læreren tilstræber at lave heterogene team med komplementære kompetencer, f.eks. kunne jeg sætte en kemi- og en miljøstuderende sammen i en gruppe, da de har forskellig faglig baggrund.

**Resultater:** Underviseren konkluderer: ”De seks undervisningsforløb, jeg har gennemført på DTU, har vist, at *de strukturer jeg bruger i CL, og den bedømmelsesform jeg benytter, er gode til at underbygge de læringsmål, jeg har med kurset, dvs. dels de faglige, dels de almen ingeniørmæssige. De studerende bliver bedømt individuelt dels på det faglige, dels på deres evne til at indgå i et team med et fælles mål.* Samtidig er eksamen blevet en naturlig del af læringsprocessen. Eksamen bliver ikke en hindring i læringsprocessen. Det er en del af arbejdet i teamet, at de studerende skriver deres refleksioner over gruppeprocessen ud fra de 6 (CL) principper, som jeg har opstillet, og de studerende bruger evalueringen på en positiv måde. Samtidig har *strukturene styrket gruppens samhørighed, så de studerende f.eks. oplever, at de har brug for hinanden, når de løser casen. Dette har også styrket det faglige udbytte af kurset for de studerende*”. (Dog underbygger forfatteren ikke hvordan han har målt at det faglige udbytte er styrket)

(Schmidt, 2006)

18.

**Forfatter/ årstal:** Alansari, Eissa M. (2006)

**Titel:** Implementation of cooperative learning in the Center for Community Service and Continuing Education at Kuwait University

**Udgivelse:** Australian Journal of Adult Learning, 46(2).

**Nationalitet:** Kuwait

**Uddannelses område/ niveau:** Universitets studerende og universitetslærere

**Udgangspunkt:** Et to årigt studie undersøger effekten af CL i universitetsundervisningen på Kuwait universitet.

**Forskningsspørgsmål:** The purpose of this study is to review the success of implementation of cooperative learning in various courses delivered at the Center for Community Service and Continuing Education at Kuwait University. According to recent research in the field of social cognition, learning situations which make use of the social context often achieve superior results over individualistic experiences.

**Fremgangsmåde og metodologi:** The investigation contains of interviews with 200 university teachers conducted for the last two years showed their experience and opinions *about the effects of cooperative learning in their classrooms on the achievement of content knowledge, retention and students' attitudes toward it.*

**Resultater:** The results of this study revealed that about 75% of the teachers believed that cooperative learning had been successfully implemented.

The present analysis offers a series of positive findings and recommendations to improve further the educational standard of the Centre in Kuwait University.

This research supports the view that cooperative learning experiences promote positive attitudes toward the instructional experience, and *provide opportunities for students to de-*

*velop skills in group interactions and in working with others that are needed in today's world.*

“The views of 200 university instructors involved in this research were examined to determine their understanding about cooperative learning as a methodology, and how and to what extent they had achieved success in its implementation in the classroom. The findings reveal that these instructors have understood the advantages of cooperative learning and the positive effects from its implementation in comparison with traditional teaching practice. Indeed, the ability to work with others within a group and to develop interpersonal skills may be justification for using cooperative learning strategies”.

#### OBS:

Studiet har fokus implementeringen af CL i undervisningen og ikke på effekten på de studerendes faglige udbytte. Der er fokus på hvorvidt lærerne opfatter CL som en brugbar undervisningsform, de svarer på fordelene ved CL og ulemperne, de svarer på hvad der kræves for at kunne udføre CL. De bliver endvidere spurgt til hvilke faktorer, der er medvirkende til at skabe en succesfuld implementering af CL. Her er svarene at: ”The majority of instructors (75%) said that cooperative learning was successfully implemented in the academic courses run in the Center for Community Service and Continuing Education at Kuwait University. Almost one-quarter claimed that it had limited success, while 16 instructors said that it was a failure”.

**Perspektiver:** Forfatteren gør netop opmærksom på at: ”Studies in which cooperative learning strategies are used for a semester or for a whole academic year should be conducted to determine if students' achievements are increased with additional experience in using cooperative learning. Future research should also focus on comparisons between different models of cooperative learning, as well as comparisons with other approaches” (Alansari, 2006)

19.

Forfatter/ årstal: Eugenia Mee-Wah Ng (2008)

**Titel:** Using IT to Foster Cooperative Learning and Peer Assessment.

**Udgivelse:** I: Red.: Ming-Fai Hui and David L. Grossman ”Improving Teacher Education through Action research”

**Nationalitet:** Kina, Hong Kong.

**Uddannelses område/ niveau:** The participants were Year 2 Bachelor of Education (Primary) preservice student teachers studying at the Hong Kong Institute of Education. They took IT as one of their minor studies. Participants had taken three modules related to IT prior to taking this module, computer-supported learning environment, which the author taught.

**Udgangspunkt:** Research on students teachers' use of online support for collaborative learning and peer assessment is not widely published. The author attempts to try these ideas using an action research approach for the module computer-supported intentional learning environment (CSLE).

**Forskningsspørgsmål:** This study aimed to investigate if learners embraced collaborative learning and peer assessment by participating in various online and face-to-face activities in addition to attending formal lectures. The author intended to equip the student teachers with collaborative skills and skills in using IT in the computer supported learning environment (CSLE) module through different cooperative activities. It is hoped that through collaboration they will be more confident in tackling different tasks together and possibly keeping close connections even after they graduate from our teacher preparation program.

**Fremgangsmåde og metodologi:** Cooperative learning approaches were practiced frequently during the course during the course of the module instruction. Learners worked together to accomplish shared learning goals and to maximize their own and their group members' achievements. Here referred to CL described by Johnson & Johnsons and Slavin.

Målingen af CL som en befordrende metode for IT er gennemført via spørgeskemaer (5 punkt likert skala) vedrørende CL og peer as-

sessments; online samtaler mellem de studerende og observeret i diskussionsforum på nettet.

De fleste opfattede CL som brugbart. CL is useful as each individual contribute differently based on their best ability and interest. They realized that they could learn more through discussion with group members and learning was active and meaningful. But negatively: It was rather time consuming and difficult to arrange time to meet and discuss with group members.

Responsraten fra deltagerne i modulet var 76%.

Observations on process of teaching and learning: the students developed from not wanting to speak out loud in class to being very willing to voice their opinions in class or in the discussion forum.

**Resultater:** The innovative teaching and learning approaches are certainly beneficial to both students and the teacher because on the one hand students' horizons can be expanded and on the other hand the academic will eventually be rewarded with good teaching evaluation.

The students were particularly positive that this module has provided them with an experience to become independent learners and to assist them to acquire skills and abilities to learn with self-initiatives.

The CL activities are able to foster participants' collaborative, communicative, critical thinking, and problem solving skills.

The cooperative learning environment is found to be more than a friend, and it is definitely not a foe. The activities are able to foster participants' collaborative, communicative, critical thinking, and problem solving skills.  
(Ng, 2008)

20.

**Forfatter/ årstal:** Bret Howard (2009)

**Titel:** Cooperative Learning Structures Improve Performance and Attitudes of High School Journalism Students

**Udgivelse:**

<http://www.kaganonline.com/KaganClub/FreeArticles/JournalismStudents.html>

**Nationalitet:** USA

**Uddannelses område/ niveau:** Highschool - gymnasium

**Forskningsspørgsmål:** The purpose of this study is to determine the effect(s) of using cooperative learning strategies on Performance Assessments and Attitudes of Journalism 1 students.

**Fremgangsmåde og metodologi:** The sixth hour Journalism class of 16 students participated in a three-week unit on "Students' Legal Rights and Responsibilities". The class consisted of one freshman, five sophomores, six juniors and four seniors (6 males and 10 females).

The two cooperative learning strategies used were: 1) "Quiz-Quiz-Trade" and 2) "Timed Pair Share". Remington High School is on a modified A-B Block schedule. The Journalism class met 8 times during this unit. The class was exposed to Quiz-Quiz-Trade and Timed Pair Share once every time they met. Lærerne på gymnasiet havde deltaget i et to dags seminar med Kagan Cooperative Learning nationale træner og det er Kagans strukturer denne lærer refererer til i sine valg af metoder.

A pre-test and post-test was given at the beginning and end of the unit as well as comparing the Journalism classes Performance Assessment scores to the previous 2 classes taking this unit. An attitudinal survey was also given at the beginning of the study and at the end to determine attitudes toward Student Legal Rights and Responsibilities and Cooperative Learning Strategies.

The teacher compared the scores on the pre-test and post-test as well as comparing the

performance assessment against the scores from the previous two Journalism classes that had taken the same performance assessment.

**Resultater:** The 2005 Journalism class had a 22% improvement in its pre-test score of 72 and its post-test score of 92. The 2004 class only had an 11% (75 to 84) increase while the 2003 class had a 13% increase (74 to 85). The 2005 Journalism class (91% class average) also showed a score 9% higher on average than the 2003 class (82% class average) or the 2004 class (86% class average).

A variety of qualitative data was collected in this study. First, an attitudinal survey was given at the beginning of the unit and again at the end of the unit. The responses given in the post-survey were very favorable in supporting the cooperative learning strategies.

The teacher writes: "I also was able to monitor several students who normally were reserved and failed to get involved in previous group discussion. With the cooperative learning structures, all team members were directed to give responses and feedback. I believe that I was able to see students that were not afraid to answer questions in front of the smaller groups of two or four".

*The results of this study showed a definite increase in improvement both on the pre-test/post-test and on the performance assessment. There was also a difference in the attitude toward both student rights' and responsibilities and cooperative learning in the attitudinal survey given.*

Therefore the results of this study indicated that using these two cooperative learning strategies had a positive impact on performance assessment scores and attitudes. (Howard, 2009)

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21.

**Forfatter/ årstal:** Jodi Van Wetering (2009)

**Titel:** Kagan Structures and High School Algebra. A Study on the Impact of Kagan Structures on Student Achievement and Attitudes

**Udgivelse:** Kagan Online Magazine, Spring.

**Nationalitet:** USA

**Udgangspunkt:** The author is a math teacher at a High School. This article summarizes the positive impact Kagan Structures had on student achievement and student attitudes in my high school Algebra classes.

**Forsknings spørgsmål:** En afprøvning af Kagens strukturer benyttet i undervisningen og sammenlignet med traditionelle undervisningsmetoder.

**Fremgangsmåde og metodologi:** The study is based on the test scores and student surveys of 114 students in five classes: three Algebra 300 classes and two Advanced Algebra 300 classes. The study includes before Kagan and after Kagan achievement comparisons as measured by average class scores, student survey results and comments, as well as my own personal reflections on teaching and learning using Kagan Structures.

The data presented compares average test and final scores from the 2005-2006 school year and the 2006-2007 school year. In 2006-2007, I began using Kagan Cooperative Learning strategies. Since the courses I taught, course content, and tests were the same for both school years, the results serve as a good comparison of instructional strategy: teaching Algebra classes using traditional instruction vs. using Kagan Structures.

**The survey of Student Attitudes:** The teacher administered the same survey to all five classes in the 2006-2007 school year. Students responded anonymously to statements about their attitudes towards cooperative learning and Kagan Structures on a scale of 1 to 4 (Strongly Agree to Strongly Disagree). Please see the Appendix for the actual survey. Below is an agree vs. disagree breakdown comparison on key survey statements, a summary of all survey results, and student comments on the survey.

**Uddannelses område/ niveau:** High school, classes of algebra.

**Resultater:** Kagan Structures had a great impact on student achievement on Algebra 300

classes as well as Advanced Algebra classes. Notably, there was a consistent improvement in the student achievement across the board. In no case did traditional instruction outperform Kagan Structures.

#### *Summary of Cooperative Learning Survey*

Over 90% of students stated:

- They felt comfortable working in groups
- They felt comfortable asking group members questions

Over 80% of students stated:

- They enjoyed working in groups
- They felt more inclined to ask a group member a question before asking the teacher
- They find their group members helpful
- They would choose a math class that used cooperative learning strategies on a regular basis

Over 70% of students stated:

- They have a better understanding of mathematics from working in a group

Over 60% of students stated:

- That being in a group has helped them become more successful in math
- They enjoyed the Simultaneous RoundTable cooperative learning strategy.

(Wetering, 2009)

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22.

Forfatter/ årstal: (Murie, 2009)

Titel: Effects of Communication on Student Learning

Udgivelse:

[www.kaganonline.com/KaganClub/index.html](http://www.kaganonline.com/KaganClub/index.html)

Nationalitet: USA

Uddannelses område/ niveau: College: i USA: universitet – matematik undervisning.

Udgangspunkt: Forfatteren er matematiklærer og har undervist 29 år på gymnasium og nu de sidste tre år på universitetet. He wondered why the grades of the students on tests weren't as good as he thought they should be.

**Forsknings spørgsmål:** Will a high amount of communication (student to student and student to teacher) affect student learning?

**Fremgangsmåde og metodologi:** The study began in the Fall 2003 semester with a single section of Math 99. Math 99 is a remedial math course that is made up of the basic fundamentals of Algebra. It meets three days a week for a semester (seventeen weeks). There were nine sections of Math 99, taught by seven instructors, and approximately two hundred students. Math 99 has a supervisor that teaches the web-based class and makes out the exams. All sections of Math 99 use the same exams.

Throughout the study the students kept a journal of each day's lesson. At the end of each week they turned in an index card containing the concepts covered each day of that week. Students were to write their journals in such a fashion that if another student had missed class he or she could read another student's journal entry and be able to understand what was done. They wrote down the main idea on an index card, explaining the process as if they were explaining it to a student that had missed the lesson. The idea was to get the students to see how others had done the explaining of the process and for each of them to see the importance of the communication. In addition to the journal and index card requirements, various Kagan Structures of CL was employed to increase the amount and type of communication in the classroom.

Multiple Kagan Structures were implemented to prepare students for the second test of the semester. This was done to compare the results from the first exam that was done by the lecture/question method to the results of the second exam to see if the new technique would have an effect.

**Resultater:** The average for the students that had attended the class was 9.9 out of 10. The results of the quiz indicated that the students who had taken part in the lesson activities understood the concept.

The results of the second exam were better than the average of the first exam. The process of more communication did increase the scores on the exam.

Typically the scores decrease across the board for the second exam. One thing that is very noticeable is the average score of students that missed less than five classes. There were eighteen students in this category and their average score was 81.4%. Fourteen of the students' grades increased from the first exam by an average of 77.18%. Four missing five or more classes did worse on the second exam by an average of 7%. The students that missed class five or more times decreased by an average of 16.5%.

A comparison of all the test scores of students enrolled in Math 99 indicates my students scored above the average. The overall average of the exam (including my class) was 61.27%.

The amount of communication does affect student learning in a positive way. The results of the tests were quite good in comparison to the results of the first exam. In the past the second test was usually 10% to 15% lower on the average than the first exam, whereas in this semester it increased. For the students who came to class regularly, it was significantly higher. Additionally, students enrolled in my section outperformed students from other sections, which did not employ cooperative learning strategies.

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23.

**Forfatter/ årstal:** (Johnson, Johnson, & Smith, 1998)

**Titel:** Cooperative Learning Returns To College: What Evidence Is There That It Works?

**Udgivelse:** Change, July/August.

**Nationalitet:** USA

**Uddannelses område/ niveau:** Gruppen over 18 år og hovedsageligt universitetsstuderende.

**Forsknings spørgsmål:**

In this article, we review the theory underlying the use of cooperative learning, the research on it conducted at the college level, and the ways it may be used appropriately in college classes.

**Fremgangsmåde og metodologi:** Artiklen henviset til en meta-analyse. "Between 1924 and 1997, over 168 studies were conducted comparing the relative efficacy of cooperative, competitive, and individualistic learning on the achievement of individuals 18 years or older".

**Resultater:** Med henvisninger til de 168 studier:

effektiviteten højnes, som følge af samarbejde i klasserummet. "Cooperative student-student interaction and student faculty interaction are the two major influences on college effectiveness (academic development, personal development, and satisfaction with the college experience)"

**Fagligt udbytte af CL:**

"These studies indicate that cooperative learning promotes higher individual achievement than do competitive approaches (effect size = 0.49) or individualistic ones (effect size = 0.53). Effect sizes of this order describe significant, substantial increases in achievement. They mean, for example, that college students who would score at the 50th percentile level when learning competitively will score in the 69th percentile when learning cooperatively; students who would score at the 53rd percentile level when learning individualistically will score at the 70th percentile when learning cooperatively".

**Socialt/interpersonelt udbytte:**

Kvaliteten af det relationelle mellem de studerende øges, som følge af samarbejde i undervisningen: "A host of researchers have investigated the quality of the relationships among students and between students and faculty. Our meta-analysis of the research using students 18 years or older found that cooperative effort promotes greater liking among students than does competing with others (effect size = 0.68) or working on one's own (effect size = 0.55); this finding holds even among students from different ethnic, cultural, language, social class, ability, and gender groups. The relevant studies include measures of interpersonal attraction, esprit de corps, cohesiveness, and trust: College students learning cooperatively perceive greater social support (both academically and personally) from peers and instructors than do students working competitively

(effect size = 0.60) or individualistically (effect size = 0.51)”

Og set i forhold til den psykiske tilpasning, det kræver af den studerende at gå på en videregående uddannelse ses det, at samarbejde skaber større selvtillid for den enkelte end fx det at konkurrere eller at skulle arbejde alene. ”*College-level studies indicate that cooperation tends to promote higher self-esteem than competitive (effect size = 0.47) or individualistic (effect size = 0.29) efforts. Members of cooperative groups also become more socially skilled than do students working competitively or individualistically*”

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