

CREATING A RESPONSIVE CLASSROOM THROUGH COLLABORATIVE LEARNING

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COLLABORATIVE LEARNING

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What is a Collaborative Learning ?

Collaborative learning is an educational approach that involves groups of learners working together to solve a problem, complete a task, or create a product. It is based on the idea that learning is a naturally social act. Learning occurs through active engagement among peers, either face-to-face or online.



PRINCIPLES OF COLLABORATIVE LEARNING

Collaborative activities are most often based on four principles:

The learner or student is the primary focus of instruction.

Interaction and "doing" are of primary importance

Working in groups is an important mode of learning.

Structured approaches to developing solutions to real-world problems should be incorporated into learning.



CHARACTERISTICS OF COLLABORATIVE LEARNING



CURRICULUM ISSUES

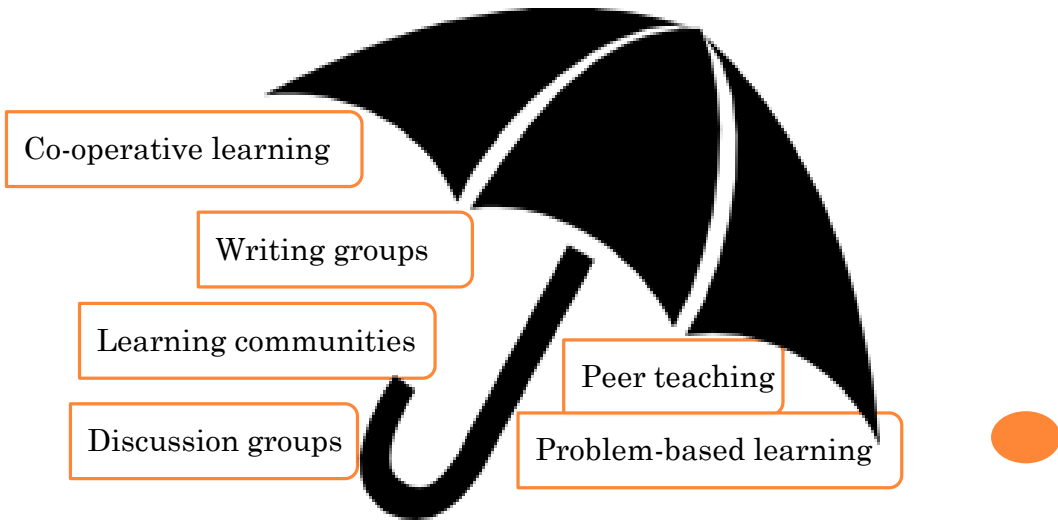
Prescriptive Curriculum

- ❖ Teacher – centered
- ❖ Linear & rational
- ❖ Part to whole organization
- ❖ Teaching as transmitting
- ❖ Learning as receiving
- ❖ Structured environment

Experiential Curriculum

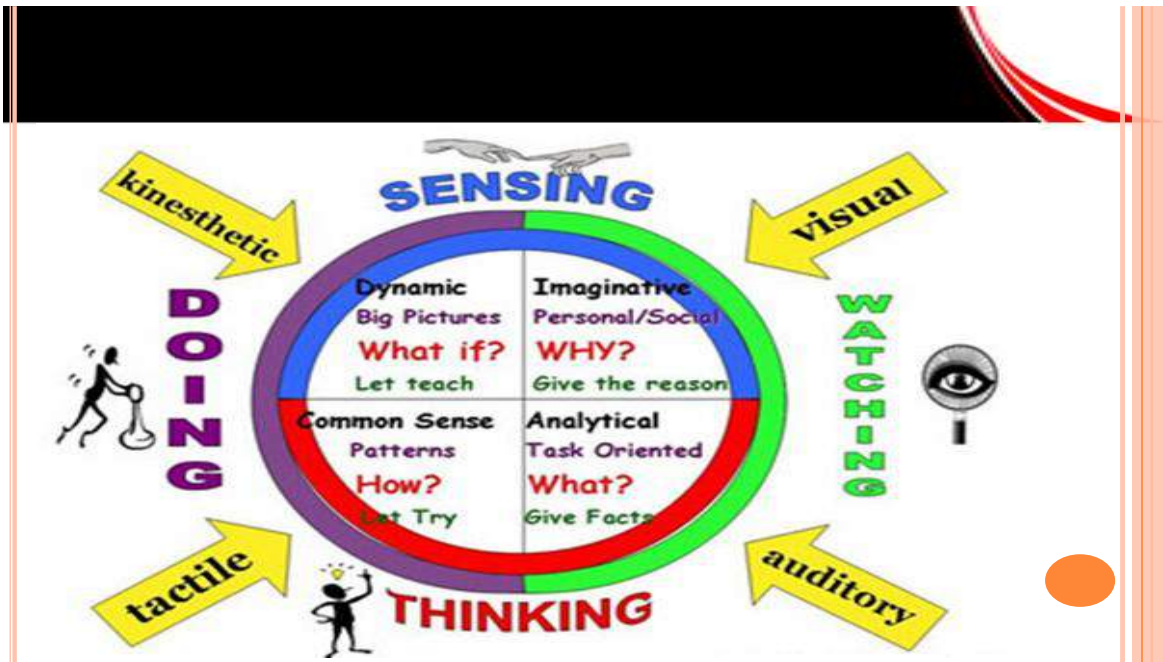
- ❖ Student – centered
- ❖ Coherent & relevant
- ❖ Whole to part organization
- ❖ Teaching as facilitating
- ❖ Learning as constructing
- ❖ Flexible environment

APPROACHES OF COLLABORATIVE LEARNING



COLLABORATIVE LEARNING STRATEGY





BENEFITS OF COLLABORATIVE LEARNING



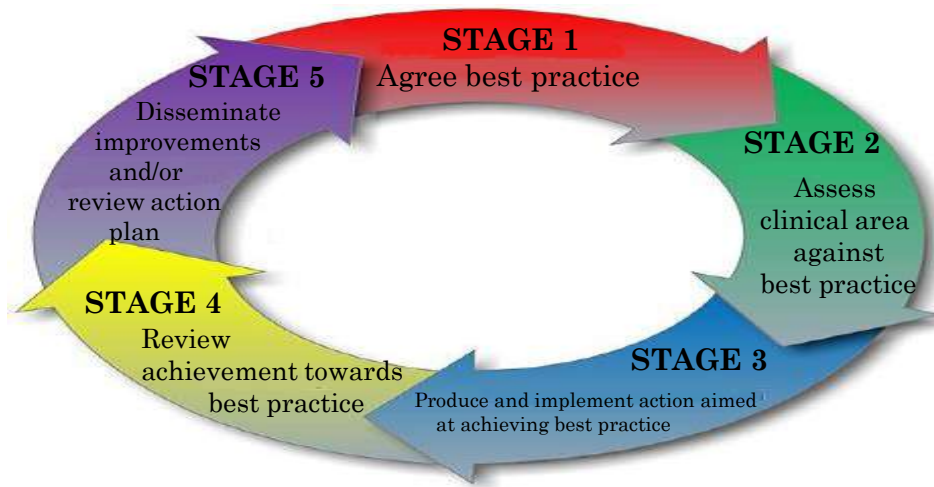
- Promote student learning and academic achievement
- Enhance student satisfaction with their learning experience
- Help students develop skills in oral communication
- Develop students social skills
- Promote student self-esteem
- Increase student retention
- Develop a community of learners

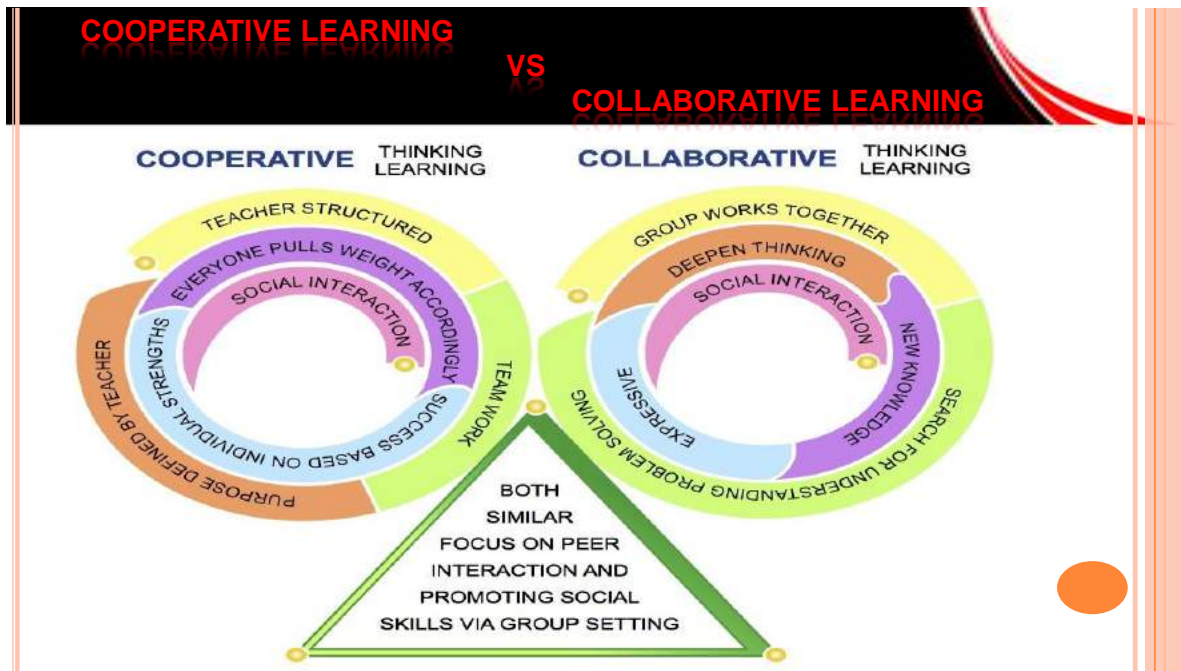
THE COLLABORATIVE CYCLE



THE COLLABORATIVE CYCLE

Building Independence Through Partnership

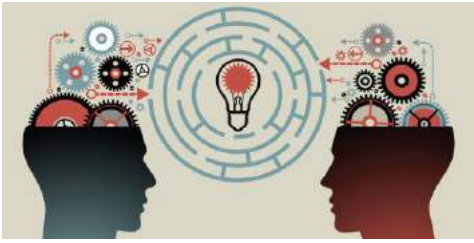





TYPES OF COLLABORATIVE LEARNING

Think-pair-share

Think-pair-share is one of the most common types of collaborating learning. It is a low-effort, low-stakes strategy for abbreviated collaboration and active learning. In this kind of learning, learners are required to work independently, share their ideas with others, consider peer responses, and ultimately engage in discussions in a manner that starts to synthesize an exchange. The above requires that learners act rather than listening passively, and this explains why teachers would often call an individual at random to share their ideas.

TYPES OF COLLABORATIVE LEARNING

Informal collaborative learning groups

As the name suggests, this is the case where a class is broken down into small fragments and assigned a group project to handle. This type of approach leads to spending less time for lecture and fundamentally improves the amount of material retained by students.



TYPES OF COLLABORATIVE LEARNING

Formal collaborative learning groups

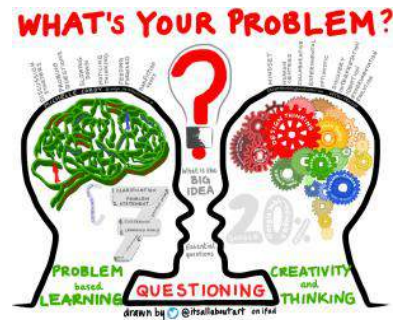
With formal learning groups, learners are assembled into specific groups, and they are required to stay together for many weeks or months working on an extensive project(s).



TYPES OF COLLABORATIVE LEARNING

Problem-Based Learning

Also known as PBL, Problem-based learning is another type of collaborative learning where a particular problem is introduced for learners to solve, often in groups, over a given period. It is required that students ultimately understand the problem at hand before proposing a solution or response. PBL starts to approximate the kind of work students do as well as the way they need to approach the problem in their daily lives.



TYPES OF COLLABORATIVE LEARNING

Collaborative base groups

Collaborative base organizations are stable, long-term groups that have been formed to last for at least a year. The teams are made up of learners with distinct attitudes and perspectives. The above type of collaborative learning provides a platform where students support each other in matters related to academics and other spheres of life. Each member is required to finish the assigned task and contribute ideas towards a given project. In most cases, students meet periodically to check on their academic progress as well as to develop healthy cognitive and social habits.



TYPES OF COLLABORATIVE LEARNING

TYPES OF COLLABORATIVE LEARNING

Jigsaw collaborative learning



As the name suggests, the above learning type makes use of jigsaw strategies to break down learning problem into small parts to be handled by several groups within a given learning environment. Each group is expected to report back beside contributing ideas in a bid to finding solutions to the problem at hand. The learning type is suitable when dealing with a large project(s).

ACTIVITY ROUND

ACTIVITY ROUND

LEARN
UNLEARN
RELEARN



Thank
you

Continuing to follow up the post 10 Signs of a 21st Century Classroom, I would like to share some ideas that we have at my school for achieving these goals. Some are actively implemented by a significant number of our faculty, while others are still just an idea being trialed by one or two teachers. I am by no means saying that these are the best or only ideas out there.

The importance of a collaborative environment cannot be overstated. Whether preparing for college or for a career, the ability to successfully work together to solve problems and create new material is a critical skill that students must be given an opportunity to practice. While it is easy to say that students are naturally good at working with their peers, here are some ideas that may help to ease the transition between conversing with others and true collaboration

Rearrange seating

The traditional arrangement of a classroom (teacher in the front, students in rows facing the same direction) works well if class is conducted in the view that the teacher is the source of all knowledge. However, in the “teacher as facilitator” model that many of us have adopted, the whole arrangement of the classroom needs to be reconsidered. Walking through our halls, several classrooms styles are observed: traditional, students gathered around tables, desks forming a large circle, and desks in clumps. Each arrangement has benefits within certain contexts. Laura Bradley has a great article about using specially designed furniture to promote a student directed, rapid change of classroom environment.

Collaborative Spaces

Even with modified seating, most classrooms aren't really designed with student collaboration in mind. Consider using other locations to encourage students to work together. Even at our small school, we have several spaces that are frequently used by other teachers. English classes are often in the library/media center (perhaps no great surprise). I have seen the geometry classes working on projects in the gym and physics building roller coasters in the band hall.

Peer Review

Reading and commenting on other students' work remains a solid way for students to gain experience giving and responding to feedback. Publishing work on blogs or Google Drive can facilitate this, but is by no means necessary. The same outcome may be achieved by passing an essay between classmates. A well designed rubric and common language is critical for transparency in this process. We are in the early stages of developing a set of shared rubrics that students and teachers across our school may use in a variety of settings so that there is less confusion as to expectations.

Coffee House

Our fine arts department gets into the spirit of collaboration with a recurring coffee house event. The event typically runs for 3 hours on a Friday night at least two or three times a year. Free refreshments are offered at this entirely student run event. Individuals or groups may sign up for one or more open mic sessions during this time. It's not unusual to see certain individuals appear on stage three or four times over the course of the evening as part of different ensembles.

Pen Pals

I use the word pen loosely here. One of the great advantages of modern technology is the ability to communicate with others all around the globe with relative ease and incredible speed. Students can gain perspective from other classes or experts all around the globe. There are a number of ways to accomplish this. Email of course can work most similarly to letter writing, but Skype or even Twitter can prove an effective way to quickly correspond with partners. While I would like to see our students using social media more for this purpose, Catholic schools in my area have traditionally viewed this form of communication as dangerous since it is often unmonitored. I am hoping to change this view by providing digital citizenship education to students, parents, and teachers.

Teacher PLN

Collaboration isn't just for students. We can learn a lot from each other as well. Facebook, Twitter, and LinkedIn are great ways to gain insight from experts in a variety of settings, but don't forget to look within your school as well. As a department head, I have been amazed at the new ideas and inspiration that I gain from my observations of my department members. Ask if you can drop in to watch a class, particularly of a teacher

outside your own subject area. And although it's tempting to work through lunch to prepare everything that's necessary for the next class, there's also much insight to be gained through faculty lounge conversations.

Collaborative learning

From Wikipedia, the free encyclopedia

Collaborative learning is a situation in which two or more people learn or attempt to learn something together.[1] Unlike individual learning, people engaged in collaborative learning capitalize on one another's resources and skills (asking one another for information, evaluating one another's ideas, monitoring one another's work, etc.).[2][3] More specifically, collaborative learning is based on the model that knowledge can be created within a population where members actively interact by sharing experiences and take on asymmetry roles.[4] Put differently, collaborative learning refers to methodologies and environments in which learners engage in a common task where each individual depends on and is accountable to each other. These include both face-to-face conversations[5] and computer discussions (online forums, chat rooms, etc.).[6] Methods for examining collaborative learning processes include conversation analysis and statistical discourse analysis.[7]

Thus, collaborative learning is commonly illustrated when groups of students work together to search for understanding, meaning, or solutions or to create an artifact or product of their learning. Further, collaborative learning redefines traditional student-teacher relationship in the classroom which results in controversy over whether this paradigm is more beneficial than harmful.[8][9] Collaborative learning activities can include collaborative writing, group projects, joint problem solving, debates, study teams, and other activities. The approach is closely related to cooperative learning.

Theoretical background

Collaborative learning is rooted in Lev Vygotsky's concept of learning called zone of proximal development. Typically there are tasks that learners can and cannot accomplish. Between these two areas is the zone of proximal development, which is a category of things that a learner can learn but with the help of guidance. The zone of proximal development gives guidance as to what set of skills a learner has that are in the process of maturation. In Vygotsky's definition of zone of proximal development, he highlighted the importance of learning through communication and interactions with others rather than just through independent work.[10] This has made way for the ideas of group learning, one of which being collaborative learning.

Collaborative learning is very important in achieving critical thinking. According to Gokhale (1995), individuals are able to achieve higher levels of learning and retain more information when they work in a group rather than individually, this applies to both the facilitators of knowledge, the instructors, and the receivers of knowledge, the students.[11] For example, Indigenous communities of the Americas illustrate that collaborative learning occurs because individual participation in learning occurs on a horizontal plane where children and adults are equal.[12]

Differences from cooperative learning

There has been a split regarding to the differences between collaborative and cooperative learning. Some believe that collaborative learning is similar, yet distinct from cooperative learning. While both models use a division of labor, collaborative learning requires the mutual engagement of all participants and a coordinated effort to solve the problem whereas cooperative learning requires individuals to take responsibility for a specific section and

then coordinate their respective parts together.[13] Another proposed differentiation is that cooperative learning is typically used for children because it is used to understand the foundations of knowledge while collaborative learning applies to college and university students because it is used to teach non-foundations of learning. Another believed difference is that cooperative learning is a philosophy of interaction where collaborative learning is a structure of interaction.[14]

However, many psychologists have defined cooperative learning and collaborative learning similarly. Both are group learning mechanisms for learners to obtain a set of skills or knowledge. Some notable psychologists that use this definition for both collaborative and cooperative learning are Johnson & Johnson, Slavin, Cooper and more.

Classroom

Often, collaborative learning is used as an umbrella term for a variety of approaches in education that involve joint intellectual effort by students or students and teachers by engaging individuals in interdependent learning activities.[15] Many have found this to be beneficial in helping students learn effectively and efficiently than if the students were to learn independently. Some positive results from collaborative learning activities are students are able to learn more material by engaging with one another and making sure everyone understands, students retain more information from thoughtful discussion, and students have a more positive attitude about learning and each other by working together.[16]

Encouraging collaborative learning may also help improve the learning environment in higher education as well. Kenneth Bruffee performed a theoretical analysis on the state of higher education in America. Bruffee aimed to redefine collaborative learning in academia. Simply including more interdependent activities will help the students become more engaged and thoughtful learners, but teaching them that obtaining knowledge is a communal activity itself.[17]

When compared to more traditional methods where students non-interactively receive information from a teacher, cooperative, problem-based learning demonstrated improvement of student engagement and retention of classroom material.[18] A meta-analysis comparing small-group work to individual work in K-12 and college classrooms also found that students working in small groups achieved significantly more than students working individually, and optimal groups for learning tended to be three- to four-member teams with lower-ability students working best in mixed groups and medium-ability students doing best in homogeneous groups. For higher-ability students, group ability levels made no difference.[19] In more than 40 studies of elementary, middle, and high school English classrooms, discussion-based practices improved comprehension of the text and critical-thinking skills for students across ethnic and socioeconomic backgrounds.[20] Even discussions lasting as briefly as ten minutes with three participants improved perceived understanding of key story events and characters.[21]

Workplace

The popularity of collaborative learning in the workplace[22] has increased over the last decade. With the emergence of many new collaborative tools, as well as the cost benefit of being able to reinforce learning in workers and in trainees during collaborative training, many work environments are now looking toward methods that involve collaborating with older employees and giving trainees more of a hands-on approach. Most

companies are transitioning from traditional training programs that include instructor-led training sessions or online guided tutorials. Collaborative learning is extremely helpful because it uses past experiences from prior employees to help new trainees get over different challenges.

There are many facets to collaboration in the workplace. It is critical to helping worker's share information with each other and creating strategic planning documents that require multiple inputs. It also allows for forms of vertical integration to find effective ways to synchronize business operations with vendors without being forced to acquire additional businesses.[23]

Many businesses still work on the traditional instructor and trainee model and as they transition from one model to another there are many issues that still need to be debugged in the conversation process:

- Need to understand actual interests and concerns regarding collaborating processes, activities and tools
- Reigning leaders and managers must better understand the collaborative tools and processes that can boost productivity
- Become better equipped to design, implement and evaluate collaborative learning environment

Web technologies have been accelerating learner-centered personalized learning environments. This helps knowledge be constructed and shared, instead of just passed down by authorities and passively consumed or ignored. Technologies such as discussion threads, email or electronic bulletin boards by sharing personal knowledge and ideas do not let others refine individual ideas so we need more collaborative tools. Now these tools on Web 2.0 have been able to enhance collaborative learning like no other because it allows individuals to work together to generate, discuss and evaluate evolving ideas. These tools allow for them to find people that are like minded and collaborate with them effortlessly.

According to a collaborative learning study conducted by Lee & Bonk (2014), there are still many issues that are still being resolved when dealing with collaborative learning in a workplace. The goal was to examine corporate personnel, including learning managers and instructors, plus the tools that they use for collaboration. The researchers conducted an online survey to see what aspects of collaborative learning should be investigated, followed by an open discussion forum with 30 corporate personnel. The results showed that collaboration is becoming very necessary in workplaces and tools such as wikis are very commonly used. There is implication for a lot of future work, in order to have collaborative learning be highly effective in the workplace. Some of the unsolved problems they identified:

- Cultural diversity, and accordingly a lack of awareness of cultural norms
- Geographical distance and time zone differences
- Member isolation in virtual teams
- Generation gaps and age differences in the acceptance of collaboration tools
- Lack of technology support for learners
- Lack of learners' awareness about effective collaboration processes and strategies
- Lack of learners' technological skills and knowledge about collaboration tools [22]

It is crucial to consider the interactive processes among people, but the most critical point is the construction of new knowledge brought about through joint work.

Technology

Technology has become an important factor in collaborative learning. Over the past ten years, the Internet has allowed for a shared space for groups to communicate. Virtual environments have been critical to allowing people to communicate long-distances but still feel like they are part of the group. Research has been conducted on how technology has helped increase the potential of collaborative learning. One study in particular conducted by Elizabeth Stacey looked at how technology affected the communication of postgraduate students studying a Master of Business Administration (MBA) using computer-mediated communication (CMC). Many of these students were able to still remotely learn even when they were not present on their university campus. The results of the study helped build an online learning environment model but since this research was conducted the Internet has grown extensively and thus new software is changing these means of communication.[24]

There has been a development of new technology that support collaborative learning in higher education and the workplace. These tools allow for a strong more power and engaging learning environment. Chickering identified seven principles for good practice in undergraduate education developed by Chickering.[25] Two of these principles are especially important in developing technology for collaboration.

"Good practice develops reciprocity and cooperation among students,"

Good practice uses active learning techniques.[25]

Some examples of how technology is being increasingly integrated with technology are as follows:

Collaborative networked learning: according to Findley (1987) "Collaborative Networked Learning (CNL) is that learning which occurs via electronic dialogue between self-directed co-learners and learners and experts. Learners share a common purpose, depend upon each other and are accountable to each other for their success. CNL occurs in interactive groups in which participants actively communicate and negotiate learning with one another within a contextual framework which may be facilitated by an online coach, mentor or group leader.

Computer-supported collaborative learning (CSCL) is a relatively new educational paradigm within collaborative learning which uses technology in a learning environment to help mediate and support group interactions in a collaborative learning context.[26][27] CSCL systems use technology to control and monitor interactions, to regulate tasks, rules, and roles, and to mediate the acquisition of new knowledge.

Collaborative learning using Wikipedia: Wikipedia is an example of how collaborative learning tools have been extremely beneficial in both the classroom and workplace setting. They are able to change based on how groups think and are able to form into a coherent idea based on the needs of the Wikipedia user.

Collaborative learning in virtual worlds by their nature provide an excellent opportunity for collaborative learning. At first learning in virtual worlds was restricted to classroom meetings and lectures, similar to their counterparts in real life. Now collaborative learning is evolving as companies starting to take advantage of unique

features offered by virtual world spaces - such as ability to record and map the flow of ideas,[17] use 3D models and virtual worlds mind mapping tools.

Cultural variations

There also exists cultural variations in ways of collaborative learning. Research in this area has mainly focused on children in indigenous Mayan communities of the Americas or in San Pedro, Guatemala and European American middle-class communities.

Generally, researchers have found that children in indigenous Mayan communities such as San Pedro typically learn through keenly observing and actively contributing to the mature activities of their community.[28] This type of learning is characterized by the learner's collaborative participation through multi-modal communication verbal and non-verbal and observations.[28] They are highly engaged within their community through focused observation.[29] Mayan parents believe that children learn best by observing and so an attentive child is seen as one who is trying to learn.[29] It has also been found that these children are extremely competent and independent in self-maintenance at an early age and tend to receive little pressure from their parents.[29]

Research has found that even when Indigenous Mayan children are in a classroom setting, the cultural orientation of indigenous learners shows that observation is a preferred strategy of learning.[30] Thus children and adults in a classroom setting adopt cultural practice and organize learning collaboratively.[30] This is in contrast to the European-American classroom model, which allocates control to teachers/adults allowing them to control classroom activities.[31]

Within the European American middle-class communities, children typically do not learn through collaborative learning methods. In the classroom, these children generally learn by engaging in initiation-reply-evaluation sequences.[28] This sequence starts with the teacher initiating an exchange, usually by asking a question. The student then replies, with the teacher evaluating the student's answer.[32] This way of learning fits with European-American middle-class cultural goals of autonomy and independence that are dominant in parenting styles within European-American middle-class culture.[28]

Examples from Indigenous communities in the Americas

Although learning happens in a variety of ways in indigenous communities, collaborative learning is one of the main methods used in indigenous learning styles instead of using European-American approaches to learning. These methods include learning in a horizontal plane where children and adults equally contribute to ideas and activities.

For example, Mayan people of San Pedro use collaboration in order to build upon one another's ideas and activities. Mayan mothers do not act as teachers when completing a task with their children, but instead collaborate with children through play and other activities.[33] People of this Mayan community use the shared endeavors method more than European-Americans who tend to use the transmit-and-test model more often.[34] The shared endeavors model is when people go off of others ideas[clarification needed] and learn from them, while the transmit-and-test model is what is used in most American schools when a teacher gives students

information and then tests the students on the information.[34] The shared endeavors model is a form of collaborative learning because everyone learns from one another and are able to hear and share others' ideas.

In Nocutzepo, Mexico, indigenous heritage families form collective units where it is generally agreed that children and youth engage in adult cooperative household or community economic practices such as food preparation, child care, participating in markets, agriculture, animal herding, and construction to name a few.[35] During planting and harvesting season, entire families are out in the fields together where children usually pitch into the activity with smaller tasks alongside adults; however, are always observant when it comes to activities done by adults, such as driving a tractor or handling an axe.[35] These children learn through imitation, observation, listening, pitching in, and doing activities in a social and cultural context.[34] When children begin to participate in the daily family/community activities, they form a sense of belonging, especially when they collaborate with adults establishing a more mature integration with their family and community.

Indigenous people of the Americas utilize collaborative learning through their emphasis on role sharing and responsibility sharing within their communities. The Mayan community of San Pedro, Guatemala utilizes flexible leadership that allows children to have an active role in their learning.[36] Children and adults work as cohesive groups when tackling new projects.[36] Collaborative learning is prevalent in Indigenous communities due to the integration of children in the daily lives of the adults.[37] Age is not a determining factor in whether or not individuals are incorporated into collaborative efforts and learning that occurs in indigenous communities.

Participation of learner is a key component to collaborative learning as it functions as the method by which the learning process occurs. Thus collaborative learning occurs when children and adults in communities switch between "knowledge performers" and "observing helpers".[38] For example, when parents in an indigenous Mazahua community were assigned the task of organizing children to build a roof over a market stand in such a way that they would learn to do it themselves, parents and children both collaborated on a horizontal structure. Switching between knowledge performer and observing helper, adults and children completed the task peacefully, without assigned roles of educator/student and illustrated that children still took initiative even when adults were still performing.[38]

Adults and children in indigenous communities of the Americas participate in a horizontal organizational structure; therefore when they work together with one another they are reciprocals of each other.[39] This horizontal structure allows for flexible leadership, which is one of the key aspects of collaborative learning. The indigenous communities of the Americas are unique in their collaborative learning because they do not discriminate upon age, instead Indigenous communities of the Americas encourage active participation and flexible leadership roles, regardless of age. Children and adults regularly interchange their roles within their community. In addition, Indigenous communities consider observation to be a part of the collaborative learning process.[38]

Collaborative learning can also be incorporated into university settings. For example, the Intercultural Maya University of Quintana Roo, Mexico, has a system that incorporates elders, such as grandparents to act as tutors and as a resource for students to discuss information and knowledge regarding their own language and culture. The elders give their recommendation at the end of a semester in the decision of passing or failing a student,

based on his/her behavior in the community and how well he/she is learning Maya. The system is called IKNAL, a mayan word that implies companionship in the learning and doing process that involves several members of the community.[40]

Examples from around the world

Collaborative learning varies across the world. The traditional model for learning is instructor based but that model is quickly changing on a global standpoint as countries fight to be at the top of the economy. A country's history, culture, religious beliefs and politics are all aspects of their national identity and these characteristics influence on citizen's view of collaboration in both a classroom and workplace setting.[41]

Germany

The culture in Germany values formality, neatness, and traditional style of education so you will most likely find individualized approach to teaching where the teacher will lecture a group of students. They also value a strong work ethic making learning very competitive so they do not usually collaborate naturally.[citation needed]

Abu Dhabi

Culture is very much mixed with religion in Abu Dhabi. Many of the rules that are followed are based on Islam. The rules regarding modesty and strong gender segregation. This does not help collaboration between genders. An example is having Emirati employees in a room and only women were allowed to attend. Much more structured than anywhere else.[citation needed]

China

They place a high value on education and hard work. There is always a competitive drive to succeed. It is very similar to the United States but it is considered impolite to question a teacher. We need to break the silence mindset, once the interaction happens it will be incredibly valuable.[citation needed]

Japan

While the empirical research in Japan is still relatively sparse, many language educators have taken advantage of Japan's natural collectivism and experimented with collaborative learning programs[42][43][44][45] More recently, technological advancements and their high adoption rate among students in Japan [46] have made computer supported collaborative learning accessible.[47][48][49] Japanese student's value for friendship and their natural inclination towards reciprocity seems to support collaborative learning in Japan.[50]

Examples

Collaborative learning development Enables developers of learning systems to work as a network. Specifically relevant to e-learning where developers can share and build knowledge into courses in a collaborative environment. Knowledge of a single subject can be pulled together from remote locations using software systems.[citation needed]

Collaborative learning in thesis circles in higher education is another example of people learning together. In a thesis circle, a number of students work together with at least one professor or lecturer, to collaboratively coach and supervise individual work on final (e.g. undergraduate or MSc) projects. Students switch frequently between their role as co-supervisor of other students and their own thesis work (incl. receiving feedback from other students).[citation needed]

Collaborative learning in a composition classroom can unite students when assigned open-tasks. Kenneth Bruffee introduced the learning method, Classroom Consensus Group, in which the instructor allocates groups of three to five (three being ideal) students and assigns a problem to be solved or question to be answered. There are two directions the nonfoundational task can be presented: as an indistinct, no right answer that generates discussion or propose an answer and request questions and a process of how the answer came to be. Once the task is assigned, the instructor backs off in order to resist the urge to intervene in students' conversation. The goal is to remove focus of the instructor's authority. The instructor must keep time to ensure the students are centered on analogizing, generalizing, and bridging their comprehension with others. Following group discussion, the instructor is to evaluate, not judge, the students' work. Ideas should be presented to the entire class thus allowing the small groups to come together as a whole. It is then that the answers can be compared, gaps can be filled, and authority is not on one individual.[51]

Collaborative scripts structure collaborative learning by creating roles and mediating interactions while allowing for flexibility in dialogue and activities.[52][53] Collaborative scripts are used in nearly all cases of collaborative learning some of which are more suited for face-to-face collaborative learning—usually, more flexible—and others for computer-supported collaborative learning—typically, more constraining.[52][53] Additionally, there are two broad types of scripts: macro-scripts and micro-scripts. Macro-scripts aim at creating situations within which desired interactions will occur. Micro-scripts emphasize activities of individual learners.[52]

Collaborative learning is also employed in the business and government sectors. For example, within the federal government of the United States, the United States Agency for International Development (USAID) is employing a collaborative project management approach that focuses on collaborating, learning and adapting (CLA). CLA involves three concepts:[54]

- collaborating intentionally with stakeholders to share knowledge and reduce duplication of effort,
- learning systematically by drawing on evidence from a variety of sources and taking time to reflect on implementation, and
- adapting strategically based on applied learning.

Collaborative information seeking

From Wikipedia, the free encyclopedia

Collaborative information seeking (CIS) is a field of research that involves studying situations, motivations, and methods for people working in collaborative groups for information seeking projects, as well as building systems for supporting such activities. Such projects often involve information searching or information retrieval (IR), information gathering, and information sharing. Beyond that, CIS can extend to collaborative information synthesis and collaborative sense-making.

Background

Seeking for information is often considered a solo activity, but there are many situations that call for people working together for information seeking. Such situations are typically complex in nature, and involve working through several sessions exploring, evaluating, and gathering relevant information. Take for example, a couple going on a trip. They have the same goal, and in order to accomplish their goal, they need to seek out several kinds of information, including flights, hotels, and sightseeing. This may involve them working together over

multiple sessions, exploring and collecting useful information, and collectively making decisions that help them move toward their common goal.

It is a common knowledge that collaboration is either necessary or highly desired in many activities that are complex or difficult to deal with for an individual. Despite its natural appeal and situational necessity, collaboration in information seeking is an understudied domain. The nature of the available information and its role in our lives have changed significantly, but the methods and tools that are used to access and share that information in collaboration have remained largely unaltered. People still use general-purpose systems such as email and IM for doing CIS projects, and there is a lack of specialized tools and techniques to support CIS explicitly.

There are also several models to explain information seeking and information behavior,[1] but the areas of collaborative information seeking and collaborative information behavior remain understudied. On the theory side, Shah has presented C5 Model[2][3] for studying collaborative situations, including information seeking. On the practical side, a few specialized systems for supporting CIS have emerged in the recent past, but their usage and evaluations have underwhelmed. Despite such limitations, the field of CIS has been getting a lot of attention lately, and several promising theories and tools have come forth. Multiple reviews of CIS related literature are written by Shah.[4] Shah's book[5] provides a comprehensive review of this field, including theories, models, systems, evaluation, and future research directions. Other books in this area include one by Morris and Teevan,[6] as well as Foster's book on collaborative information behavior.[7] and Hansen, Shah, and Klas's edited book on CIS.[8]

Theories

Depending upon what one includes or excludes while talking about CIS, we have many or hardly any theories. If we consider the past work on the groupware systems, many interesting insights can be obtained about people working on collaborative projects, the issues they face, and the guidelines for system designers. One of the notable works is by Grudin,[9] who laid out eight design principles for developers of groupware systems.

The discussion below is primarily based on some of the recent works in the field of computer supported cooperative work CSCW, collaborative IR, and CIS.

Definitions and terminology

The literature is filled with works that use terms such as collaborative information retrieval,[10][11] social searching,[12] concurrent search,[13] collaborative exploratory search,[14] co-browsing,[15] collaborative information behavior,[16][17] collaborative information synthesis,[18] and collaborative information seeking,[19][20] which are often used interchangeably.

There are several definitions of such related or similar terms in the literature. For instance, Foster[21] defined collaborative IR as "the study of the systems and practices that enable individuals to collaborate during the seeking, searching, and retrieval of information." Shah[22] defined CIS as a process of collaboratively seeking information that is "defined explicitly among the participants, interactive, and mutually beneficial." While there is still a lack of a definition or a terminology that is universally accepted, but most agree that CIS is an active

process, as opposed to collaborative filtering, where a system connects the users based on their passive involvement (e.g., buying similar products on Amazon).

Models of collaboration

Foley and Smeaton[23] defined two key aspects of collaborative information seeking as division of labor and the sharing of knowledge. Division of labor allows collaborating searchers to tackle larger problems by reducing the duplication of effort (e.g., finding documents that one's collaborator has already discovered). The sharing of knowledge allows searchers to influence each other's activities as they interact with the retrieval system in pursuit of their (often evolving) information need. This influence can occur in real time if the collaborative search system supports it, or it can occur in a turn-taking, asynchronous manner if that is how interaction is structured.

Teevan et al.[24] characterized two classes of collaboration, task-based vs. trait-based. Task-based collaboration corresponds to intentional collaboration; trait-based collaboration facilitates the sharing of knowledge through inferred similarity of information need.

Situations, motivations, and methods

One of the important issues to study in CIS is the instance, reason, and the methods behind a collaboration. For instance, Morris,[25] using a survey with 204 knowledge workers at a large technology company found that people often like and want to collaborate, but they do not find specialized tools to help them in such endeavors. Some of the situations for doing collaborative information seeking in this survey were travel planning, shopping, and literature search. Shah,[26] similarly, using personal interviews, identified three main reasons why people collaborate.

Requirement/setup. Sometimes a group of people are "forced" to collaborate. Example includes a merger between two companies.

Division of labor. Working together may help the participants to distribute the workload. Example includes a group of students working on a class project.

Diversity of skills. Often people get together because they could not individually possess the required set of skills. Example includes co-authorship, where different authors bring different set of skills to the table.

As far as the tools and/or methods for CIS are concerned, both Morris and Shah found that email is still the most used tool. Other popular methods are face-to-face meetings, IM, and phone or conference calls. In general, the choice of the method or tool for our respondents depended on their situation (co-located or remote), and objective (brainstorming or working on independent parts).

Space-time organization of CIS systems and methods

The classical way of organizing collaborative activities is based on two factors: location and time.[27] Recently Hansen & Jarvelin[28] and Golovchinsky, Pickens, & Back[29] also classified approaches to collaborative IR using these two dimensions of space and time. See "Browsing is a Collaborative Process",[30] where the authors depict various library activities on these two dimensions.[31]

As we can see from this figure, the majority of collaborative activities in conventional libraries are co-located and synchronous, whereas collaborative activities relating to digital libraries are more remote and asynchronous. Social

information filtering, or collaborative filtering, as we saw earlier, is a process benefitting from other users' actions in the past; thus, it falls under asynchronous and mostly remote domain. These days email also serves as a tool for doing asynchronous collaboration among users who are not co-located. Chat or IM (represented as 'internet' in the figure) helps to carry out synchronous and remote collaboration.

Rodden,[27] similarly, presented a classification of CSCW systems using the form of interaction and the geographical nature of cooperative systems. Further, Rodden & Blair[32] presented an important characteristic to all CSCW systems – control. According to the authors, two predominant control mechanisms have emerged within CSCW systems: speech act theory systems, and procedure based systems. These mechanisms are tightly coupled with the kind of control the system can support in a collaborative environment (discussed later).

Often researchers also talk about other dimensions, such as intentionality and depth of mediation (system mediated or user mediated),[29] while classifying various CIS systems.

Control, communication, and awareness

Three components specific to group-work or collaboration that are highly predominant in the CIS or CSCW literature are control, communication, and awareness. In this section key definitions and related works for these components will be highlighted. Understanding their roles can also help us address various design issues with CIS systems.

Control

Rodden identified the value of control in CSCW systems and listed a number of projects with their corresponding schemes for implementing for control. For instance, the COSMOS project[33] had a formal structure to represent control in the system. They used roles to represent people or automatons, and rules to represent the flow and processes. Roles of the people could be supervisor, processor, or analyst. Rules could be a condition that a process needs to satisfy in order to start or finish. Due to such a structure seen in projects like COSMOS, Rodden classified these control systems as procedural based systems.

Communication

This is one of the most critical components of any collaboration. In fact, Rodden (1991) identified message or communication systems as the class of systems in CSCW that is most mature and most widely used.

Since the focus here is on CIS systems that allow its participants to engage in an intentional and interactive collaboration, there must be a way for the participants to communicate with each other. What is interesting to note is that often, collaboration could begin by letting a group of users communicate with each other. For instance, Donath & Robertson[34] presented a system that allows a user to know that others were currently viewing the same webpage and communicate with those people to initiate a possible collaboration or at least a co-browsing experience. Providing communication capabilities even in an environment that was not originally designed for carrying out collaboration is an interesting way of encouraging collaboration.

Awareness

Awareness, in the context of CSCW, has been defined as "an understanding of the activities of others, which provides a context for your own activity".[35] The following four kinds of awareness are often discussed and addressed in the CSCW literature:[36]

Group awareness. This kind of awareness includes providing information to each group member about the status and activities of the other collaborators at a given time.

Workspace awareness. This refers to a common workspace that the group has where they can bring and discuss their findings, and create a common product.

Contextual awareness. This type of awareness relates to the application domain, rather than the users. Here, we want to identify what content is useful for the group, and what the goals are for the current project.

Peripheral awareness. This relates to the kind of information that has resulted from personal and the group's collective history, and should be kept separate from what a participant is currently viewing or doing.

Shah and Marchionini[37] studied awareness as provided by interface in collaborative information seeking. They found that one needs to provide "right" (not too little, not too much, and appropriate for the task at hand) kind of awareness to reduce the cost of coordination and maximize the benefits of collaboration.

Systems

A number of specialized systems have been developed back from the days of the groupware systems to today's Web 2.0 interfaces. A few such examples, in chronological order, are given below.

Ariadne

Twidale et al.[38] developed Ariadne to support the collaborative learning of database browsing skills. In addition to enhancing the opportunities and effectiveness of the collaborative learning that already occurred, Ariadne was designed to provide the facilities that would allow collaborations to persist as people increasingly searched information remotely and had less opportunity for spontaneous face-to-face collaboration.

Ariadne was developed in the days when Telnet-based access to library catalogs was a common practice. Building on top of this command-line interface, Ariadne could capture the users' input and the database's output, and form them into a search history that consisted of a series of command-output pairs. Such a separation of capture and display allowed Ariadne to work with various forms of data capture methods.

To support complex browsing processes in collaboration, Ariadne presented a visualization of the search process.[39] This visualization consisted of thumbnails of screens, looking like playing cards, which represented command-output pairs. Any such card can be expanded to reveal its details. The horizontal axis on Ariadne's display represented time, and the vertical axis showed information on the semantics of the action it represented: the top row for the top level menus, the middle row for specifying a search, and the bottom row for looking at particular book details.

This visualization of the search process in Ariadne makes it possible to annotate, discuss with colleagues around the screen, and distribute to remote collaborators for asynchronous commenting easily and effectively. As we saw in the previous section, having access to one's history as well as the history of one's collaborators are very crucial to effective collaboration. Ariadne implements these requirements with the features that let one visualize, save, and share a search process. In fact, the authors found one of the advantages of search visualization was the ability to recap previous searching sessions easily in a multi-session exploratory searching.

SearchTogether

More recently, one of the collaborative information seeking tools that have caught a lot of attention is SearchTogether, developed by Morris and Horvitz.[40] The design of this tool was motivated by a survey that the researchers did with 204 knowledge workers,[25] in which they discovered the following.

A majority of respondents wanted to collaborate while searching on the Web.

The most common ways of collaborating in information seeking tasks are sending emails back and forth, using IM to exchange links and query terms, and using phone calls while looking at a Web browser.

Some of the most popular Web searching tasks on which people like to collaborate are planning travels or social events, making expensive purchases, researching medical conditions, and looking for information related to a common project.

Based on the survey responses, and the current and desired practices for collaborative search, the authors of SearchTogether identified three key features for supporting people's collaborative information behavior while searching on the Web: awareness, division of labor, and persistence. Let us look at how these three features are implemented.

SearchTogether instantiates awareness in several ways, one of which is per-user query histories. This is done by showing each group member's screen name, his/her photo and queries in the "Query Awareness" region. The access to the query histories is immediate and interactive, as clicking on a query brings back the results of that query from when it was executed. The authors identified query awareness as a very important feature in collaborative searching, which allows group members to not only share their query terms, but also learn better query formulation techniques from one another.

Another component of SearchTogether that facilitates awareness is the display of page-specific metadata. This region includes several pieces of information about the displayed page, including group members who viewed the given page, and their comments and ratings. The authors claim that such visitation information can help one either choose to avoid a page already visited by someone in the group to reduce the duplication of efforts, or perhaps choose to visit such pages, as they provide a sign of promising leads as indicated by the presence of comments and/or ratings.

Division of labor in SearchTogether is implemented in three ways: (1) "Split Search" allows one to split the search results among all online group members in a round-robin fashion, (2) "Multi-Engine Search" takes a query and runs it on n different search engines, where n is the number of online group members, (3) manual division of labor can be facilitated using integrated IM.

Finally, the persistence feature in SearchTogether is instantiated by storing all the objects and actions, including IM conversations, query histories, recommendation queues, and page-specific metadata. Such data about all the group members are available to each member when he/she logs in. This allows one to easily carry a multi-session collaborative project.

Cerchiamo

Cerchiamo[41][42] is a collaborative information seeking tool that explores issues related to algorithmic mediation of information seeking activities and how collaborators' roles can be used to structure the user interface. Cerchiamo introduced the notion of algorithmic mediation, that is, the ability of the system to collect input asynchronously from multiple collaborating searchers, and to use these multiple streams of input to affect the information that is being retrieved and displayed to the searchers.

Cerchiamo collected judgments of relevance from multiple collaborating searchers and used those judgments to create a ranked list of items that were potentially relevant to the information need. This algorithm prioritized items that were retrieved by multiple queries and that were retrieved by queries that also retrieved many other relevant documents. This rank fusion is just one way in which a search system that manages activities of multiple collaborating searchers can combine their inputs to generate results that are better than those produced by individuals working independently.

Cerchiamo implemented two roles—Prospector and Miner—that searchers could assume. Each role had an associated interface. The Prospector role/interface focused on running many queries and making a few judgments of relevance for each query to explore the information space. The Miner role/interface focused on making relevance judgments on a ranked list of items selected from items retrieved by all queries in the current session. This combination of roles allowed searchers to explore and exploit the information space, and led teams to discover more unique relevant documents than pairs of individuals working separately.[41]

Coagmento

Coagmento (Latin for "working together") is a new and unique system that allows a group of people work together for their information seeking tasks without leaving their browsers. Coagmento has been developed with a client-server architecture, where the client is implemented as a Firefox plug-in that helps multiple people working in collaboration to communicate, and search, share and organize information. The server component stores and provides all the objects and actions collected from the client. Due to this decoupling, Coagmento provides a flexible architecture that allows its users to be co-located or remote, working synchronously or asynchronously, and use different platforms.

Coagmento includes a toolbar and a sidebar. The toolbar has several buttons that helps one collect information and be aware of the progress in a given collaboration. The toolbar has three major parts:

Buttons for collecting information and making annotations. These buttons help one save or remove a webpage, make annotations on a webpage, and highlight and collect text snippets.

Page-specific statistics. The middle portion of the toolbar shows various statistics, such as the number of views, annotations, and snippets, for the displayed page. A user can click on a given statistic and obtain more information. For instance, clicking on the number of snippets will bring up a window that shows all the snippets collected by the collaborators from the displayed page.

Project-specific statistics. The last portion of the toolbar displays task/project name and various statistics, including number of pages visited and saved, about the current project. Clicking on that portion brings up the workspace where one can view all the collected objects (pages and snippets) brought in by the collaborators for that project.

The sidebar features a chat window, under which there are three tabs with the history of search engine queries, saved pages and snippets. With each of these objects, the user who created or collected that object is shown. Anyone in the group can access an object by clicking on it. For instance, one can click on a query issued by anyone in the group to re-run that query and bring up the results in the main browser window.

An Android (operating system) app for Coagmento can be found in the Android Market.

Cosme

Fernandez-Luna et al.[43] introduce Cosme (COde Search MEeting) as a NetBeans IDE plug-in that enables remote team of software developers to collaborate in real time during source-code search sessions. The COSME design was motivated by early studies of C. Foley, M. R. Morris, C. Shah, among others researchers, and by habits of software developers identified in a survey of 117 universities students and professors related with projects of software development, as well as to computer programmers of some companies. The five more common collaborative search habits (or related to it) of the interviewees was:

- Revision of problems by the team in the workstation of one of them.

- Suggest addresses of Web pages that they have already visited previously, digital books stored in some FTP, or source files of a version control system.

- Send emails with algorithms or explanatory text.

- Division of search tasks among each member of the team for sharing the final result.

- Store relevant information in individual workstation.

COSME is designed to enable either synchronous or asynchronous, but explicit remote collaboration among team developers with shared technical information needs. Its client user interface include a search panel that lets developers to specify queries, division of labor principle (possible combination include the use of different search engines, ranking fusion, and split algorithms), searching field (comments, source-code, class or methods declaration), and the collection type (source-code files or digital documentation). The sessions panel wraps the principal options to management the collaborative search sessions, which consists in a team of developers working together to satisfy their shared technical information needs. For example, a developer can use the embedded chat room to negotiate the creation of a collaborative search session, and show comments of the current and historical search results. The implementation of Cosme was based on CIRLab (Collaborative Information Retrieval Laboratory) instantiation, a groupware framework for CIS research and experimentation, Java as programming language, NetBeans IDE Platform as plug-in base, and Amenities (A Methodology for aNalysis and desIgn of cooperaTive systEmS) as software engineering methodology.

Open-source application frameworks and toolkits

CIS systems development is a complex task, which involves software technologies and Know-how in different areas such as distributed programming, information search and retrieval, collaboration among people, task coordination and many others according to the context. This situation is not ideal because it requires great programming efforts. Fortunately, some CIS application frameworks and toolkits are increasing their popularity

since they have a high reusability impact for both developers and researchers, like Coagmento Collaboratory and DrakkarKeel.

Future research directions

Ambox question.svg

This section possibly contains previously unpublished synthesis of published material that conveys ideas not attributable to the original sources. Relevant discussion may be found on the talk page. (January 2016) (Learn how and when to remove this template message)

Many interesting and important questions remain to be addressed in the field of CIS, including

Why do people collaborate? Identifying their motivations can help us design better support for their specific needs.

What additional tools are required to enhance existing methods of collaboration, given a specific domain?

How to evaluate various aspects of collaborative information seeking, including system and user performance?

How to measure the costs and benefits of collaboration?

What are the information seeking situations in which collaboration is beneficial? When does it not pay off?

How can we measure the performance of a collaborative group?

How can we measure the contribution of an individual in a collaborative group?

What sorts of retrieval algorithms can be used to combine input from multiple searchers?

What kinds of algorithmic mediation can improve team performance?

Collaborative innovation network

From Wikipedia, the free encyclopedia

Collaborative innovation is a process in which multiple players (within and outside an organization) contribute towards creating and developing new products, services, processes and business solutions. It might include the involvement of customers, suppliers and multiple stakeholders such as agencies and consultants[1]

Usually, firms that promote open forms of collaboration benefit from having access to different capabilities and knowledge, enhancing their competitiveness and accelerating their innovation process. On one hand, it enables small companies such as start-ups to partner with other players, complementing each other and taking advantage of different perspectives and resources. On the other hand, it helps large companies to speed-up their innovation process and time-to-market, overcoming bureaucracy and inflexible procedures.[2]

Collaboration can occur in all aspects of the business cycle, depending on the context:

Procurement and supplier collaboration

Research and development of new products, services and technologies

Marketing, distribution and commercialization

Collaborative innovation network (CoIN) is a type of collaborative innovation practice that makes use of the internet platforms such as email, chat, social networks, blogs, and Wikis to promote communication and

innovation within self-organizing virtual teams. The difference is that people that collaborate in CoIN are so intrinsically motivated that might not be paid nor get any advantage.

Thus, a CoIN is a social construct with a huge potential for innovation. It has been defined by the originator of the term, Peter Gloor from MIT Sloan's Center for Collective Intelligence, as "a cyberteam of self-motivated people with a collective vision, enabled by the Web to collaborate in achieving a common goal by sharing ideas, information, and work".

Indeed, CoIN is a type of open collaboration that helps organizations to become more creative, productive and efficient. By adopting CoIN as part of their culture, these companies accelerate innovation, uncover hidden business opportunities, reduce costs and enhance synergies. They not only can engage employees from every level of hierarchy towards a common project (discovering new talents and promoting direct relation between employees) but also partner with external parties.

Similar is the concept of the "Self-Organizing Innovation Network", it has been described by author, Robert Rycroft of the Elliott School of International Affairs of George
Overview

CoINs feature internal transparency and direct communication. Members of a COIN collaborate and share knowledge directly with each other, rather than through hierarchies. They come together with a shared vision because they are intrinsically motivated to do so and seek to collaborate in some way to advance an idea.

CoINs work across hierarchies and boundaries in which members can directly and openly exchange ideas and information. This collaborative and transparent environment fosters innovation. Gloor describes phenomenon as "swarm creativity". According to him, "COINs are the best engines to drive innovation".[3]

CoINs existed well before the advent of modern communication technology. However, internet and instant communication improved productivity and enabled the reach of a global scale. Today, they rely on Internet, e-mail, and other communications vehicles for information sharing.[3]

According to Peter Gloor,[3] CoINs have 5 main characteristics:

Dispersed Membership: technology allows members to be spread over the world. Regardless of the location, members share a common goal and are convinced of their common cause.

Interdependent Membership: cooperation between members is key to achieve common goal. The work of one member is affected and interdependent on the others' work.

No simple chain of command: there is no superior command. It is a decentralized and self-organized system. Conflicts are solved without the need of a hierarchy or authority.

Work towards a common goal: members are willing to contribute, work and share freely. They are intrinsically motivated to donate their work, create and share knowledge in favor of a common goal.

Dependence on trust: cooperative behavior and mutual trust is needed to work efficiently within the network. Members act accordingly to an ethical code that states the rules and principles to be followed by all members. Usually, ethical codes include principles related to respect, consistency, reciprocity and rationality.

There also are five essential elements of collaborative innovation networks (what Gloor calls as "genetic code"): [3]

1. They are learning networks: they set an informal and flexible environment which facilitates and stimulates collaboration and the exchange of ideas, information and knowledge.
2. They need an ethical code: they agree on an ethical code that guides the conduct and behavior of the members.
3. They are based on trust and self-organization: members trust each other without the need of a centralized management. They are brought together by mutual respect and strong sense of shared beliefs.
4. They make knowledge accessible to everyone: CoINs nurture communication to an extent that information shared with everyone. Nowadays, with internet and social medias, their ideas and concepts achieve a global level.
5. They operate in internal honesty and transparency: they create a system based on reciprocal trust and mutually established principles.

Examples of CoIN

CoINs have been developing many disruptive innovations such as the Internet, Linux, the Web and Wikipedia. These inventions were created in universities or labs by a group of enthusiastic students with little or no budget. They were not focused on the money but on the sense of accomplishment. [3]

The Web is the early version of Internet. It was driven by a CoIN of intrinsically motivated people that wanted to improve technical development and launch a disruptive solution. Their goal was to link mainframes and allow multiple users simultaneously.

Another important contribution of CoIN was Linux, an operating system for personal computing that directly competes with Microsoft. It was initially developed by a student called Linus Torvalds and later became an open source software. Today, the code is publicly available and anyone can contribute or enhance it. The success of Linux is the constant and continuous updating which is done at a much lower cost than closed source software.

Last but not least, Wikipedia gathers thousands of volunteers that constantly write and update content. Although it does not have a hierarchy nor a central authority, the entries are mostly accurate and complete. Volunteers share a strong feeling of community and willingness to contribute towards knowledge without being paid for it.

Faced with these creations, large companies such as IBM and Intel have learnt to use the principles of open innovation to enhance their research learning curve. They increased or established collaborations with universities, agencies and small companies to accelerate their processes and launch new services faster. [3]

Current Challenges

Although it exists for long time, Collaborative Innovation still needs to be empowered. A more collaborative approach involving stakeholders such as governments, corporations, entrepreneurs and scholars is key to tackle the main challenges facing today.

First of all, it is still important to raise the awareness of CoIN and its benefits among companies and major economic fields. Policy makers and corporate leaders could support the development of programs, strategies and educational plans to stimulate CoINs in specific sectors, benefiting the whole economy.[2]

Second, the overall legal and regulatory framework still needs to evolve to foster cross-firm collaboration. Fiscal and intellectual property regimes should be reviewed to provide the necessary infrastructure to nourish CoINs. A further stimulus is important to encourage the creation of start-ups and the development of a network of partners across companies.[2]

Finally, financial aid should be granted to support collaborative projects related to technology, research and innovation. CoINs have an enormous potential to deliver innovation and drive significant gains in competitiveness. However, they need resources in order to fully operate and reach their maximum potential.

Future

As COINs become increasingly popular among governments and corporations, the ethical, financial, economic, and cognitive issues which drive incentives will inevitably face challenges. Over time potential innovators may be unwilling to participate in projects merely on the basis of implied financial gain. As globalization begins to impact traditional models of planned social progress, the broader political context in which participants cooperate has become more relevant lately. This suggests an increased need for independent parties to collaborate on the basis of agreed upon principles and objectives, ultimately this could encompass the interests of humanity and the emergence of a global culture.

Collaborative Learning

44 Benefits of Collaborative Learning

- Develops higher level thinking skills
- Promotes student-faculty interaction and familiarity
- Increases student retention
- Builds self esteem in students
- Enhances student satisfaction with the learning experience
- Promotes a positive attitude toward the subject matter
- Develops oral communication skills
- Develops social interaction skills
- Promotes positive race relations
- Creates an environment of active, involved, exploratory learning
- Uses a team approach to problem solving while maintaining individual accountability
- Encourages diversity understanding
- Encourages student responsibility for learning

Involves students in developing curriculum and class procedures
 Students explore alternate problem solutions in a safe environment
 Stimulates critical thinking and helps students clarify ideas through discussion and debate
 Enhances self management skills
 Fits in well with the constructivist approach
 Establishes an atmosphere of cooperation and helping schoolwide
 Students develop responsibility for each other
 Builds more positive heterogeneous relationships
 Encourages alternate student assessment techniques
 Fosters and develops interpersonal relationships
 Modelling problem solving techniques by students' peers
 Students are taught how to criticize ideas, not people
 Sets high expectations for students and teachers
 Promotes higher achievement and class attendance .
 Students stay on task more and are less disruptive
 Greater ability of students to view situations from others' perspectives (development of empathy)
 Creates a stronger social support system
 Creates a more positive attitude toward teachers, principals and other school personnel by students and creates
 a more positive attitude by teachers toward their students
 Addresses learning style differences among students
 Promotes innovation in teaching and classroom techniques
 Classroom anxiety is significantly reduced
 Test anxiety is significantly reduced
 Classroom resembles real life social and employment situations
 Students practice modeling societal and work related roles
 CL is synergistic with writing across the curriculum
 CL activities can be used to personalize large lecture classes
 Skill building and practice can be enhanced and made less tedious through CL activities in and out of class.
 CL activities promote social and academic relationships well beyond the classroom and individual course
 CL processes create environments where students can practice building leadership skills.
 CL increases leadership skills of female students
 In colleges where students commute to school and do not remain on campus to participate in campus life
 activities, CL creates a community environment within the classroom.

Source: Posted on Co-Learn mailing list by Ted Panitz TPANITZ@mecn.mass.edu

Collaborative Learning

More About CL

Collaborative learning (CL) is instruction that involves students working in teams to accomplish a common goal, under conditions that include the following elements (Johnson, Johnson, and Smith, 1991):

Positive interdependence. Team members are obliged to rely on one another to achieve the goal. If any team members fail to do their part, everyone suffers consequences.

Individual accountability. All students in a group are held accountable for doing their share of the work and for mastery of all of the material to be learned.

Face-to-face promotive interaction. Although some of the group work may be parcelled out and done individually, some must be done interactively, with group members providing one another with feedback, challenging one another's conclusions and reasoning, and perhaps most importantly, teaching and encouraging one another.

Appropriate use of collaborative skills. Students are encouraged and helped to develop and practice trust-building, leadership, decision-making, communication, and conflict management skills.

Group processing. Team members set group goals, periodically assess what they are doing well as a team, and identify changes they will make to function more effectively in the future.

Collaborative learning is not simply a synonym for students working in groups. A learning exercise only qualifies as CL to the extent that the listed elements are present.

Collaborative Learning

The Make-up of a CL Session

Members of effective collaborative learning groups have specific roles. Each member may assume several roles at a given session; in fact, for smaller groups it will be necessary for each member to have more than one duty.

Chair or Leader

This person is the agenda-setting facilitator.

In other words, the chair or leader sets the agenda of the session, with input from the rest of the group.

Time Keeper

This person is the agenda facilitator.

The time keeper keeps track of the amount of time spent on each activity in the session and makes sure pre-arranged time allocations in the agenda are followed.

Room Scheduler

This person arranges the date, time and place of the study session with school administrators, if necessary.

The room scheduler may also be responsible for contacting study group members to remind them about sessions.

Resource Arranger

This person arranges for supplies and resources for the session.

Resources may include reference books from the library, peer tutors, or overhead projectors.

Group Process Evaluator

This person evaluates the effectiveness and efficiency of the session.

Producer or Participant

This person takes part in the scheduled activities of the session.

In most cases, all members of the study group are participants.

Resource Person

This person is not necessarily a constant member of the group.

The resource person is present when needed to provide additional resources to the group members.

The resource person may be a faculty member, a tutor, or another knowledgeable person.

Collaborative Learning

The Conditions for Effective Collaborative Learning

There are three key conditions for effective collaborative learning:

Group composition

Task features

Communication media

Group composition

One factor that determines the efficiency of collaborative learning is the composition of the group. This factor is defined by several variables: the age and levels of participants, the size of the group, the difference between group members, etc.

Regarding the number of members, small groups seems to function better than large groups in which some members tend be 'asleep' or excluded from interesting interactions. Most of the mechanisms described in the previous section, e.g. mutual regulation, social grounding, shared cognitive load, ..., can only occur between a few participants. This does not argue in disfavor of large group sessions. It simply means that distance learning

activities should also include 'closed' sessions, in which a restricted number of subjects collaborate and/or 'monitored' session in which the teacher takes care that no learner is left out the interaction.

Regarding the participants, some developmental level is necessary to be able to collaborate, but this is only an issue for children and does hence not directly concern current distance education activities which mainly concern adult learners.

The most intensively studied variable is the heterogeneity of the group. It refers to the objective or the subjective differences (how subjects perceive each other) among group members. These differences can be general (age, intelligence, development, school performance, ...) or task specific. Results indicate there exists some 'optimal heterogeneity', i.e. some difference of viewpoints is required to trigger interactions, but within the boundaries of mutual interest and intelligibility. Heterogeneity can easily be understood as a condition to trigger conflicts and require social grounding, two important mechanisms described above. Heterogeneity is also implicit in the socio-cultural theory and its related mechanisms (internalization and appropriation) which rely on the observation of adult-child pairs or at least pairs with one member being more knowledgeable on the task than the other.

Internet-based information and communication tools have a great potential with respect to heterogeneity: no infrastructure can better cross geographic, cultural and professional boundaries. Nevertheless, human beings have a natural trend to assemble with those who are the most similar to them. When participants join the group on their own decision, there is no control of heterogeneity. If the tutor observes too much homogeneity among the group members, he may modify some conditions in order to activate anyway the mechanisms that normally rely on heterogeneity. He may for instance allocate role to participants which will inevitably create conflict or provide them with contradictory information.

Task features

The effects of collaboration vary according to the task. Some tasks prevent the activation of the mechanisms described above, while other tasks are appropriated. For instance, some tasks are inherently distributed and lead group members to work on their own, independently from each other. Interaction occurs when assembling partial results, but not during each individual's reasoning process. Without interaction, none of the described mechanisms can be activated. Some tasks are so straightforward that they do not leave any opportunity for disagreement or misunderstanding. Some tasks do not involve any planning and hence create no need for mutual regulation. Some tasks cannot be shared, because they rely on processes (e.g. perception) which are not open to introspection or on skills (e.g. motor skills) that leave no time for interaction.

If distance teachers want to take these features into account, a first attitude would be to use only collaborative learning for tasks for which it will get its optimal efficiency. Another solution is to modify the task, as explained in the previous paragraph, to make them more suited for collaboration. For instance, the 'jigsaw' method consists of providing group members with partial data. This method artificially turns a monolithic problem into a task which requires collaboration.

Task features also include the environment in which the task has to be performed. This is especially important in computer-based tasks. The software features may modify interactions among learners. For instance, if a computer-based task provides the learner immediately with a feed-back on their actions, it may prevent them to discuss the consequences of their action

Communication media

Whatever task and group members have been selected, the collaboration may not work because the medium used for communication is not adequate. It would be beyond the scope of this paper to describe each available media. Basically, most of current widely available Internet-based tools use text-based communication, synchronous or asynchronous, with mostly fixed graphics and images. Voice and video interaction or voice and video mail are of course available, but the overload of standard networks and the limits of currently available hardware has postponed their larger use in current distance education.

Most of the mechanisms described in the previous section can be conveyed via text-based communication, but with some perturbations. For instance, the cost of interaction being higher with text, the group members may reduce the number of disambiguating sub-dialogues used in social-grounding. At the opposite, in asynchronous text messages, they have more time to build sentences which are less ambiguous. Without video link, members also lose facial expressions which are useful to monitor the partner's understanding. Even with video images, they may see their partner but ignore where the partner looks, something which is important for understanding what she refers to. Some video system support eye contact with appear to be related to metacognitive aspects.

Collaborative Learning

Four Collaborative Learning Strategies

THINK-PAIR-SHARE: (1) The instructor poses a question, preferable one demanding analysis, evaluation, or synthesis, and gives students about a minute to think through an appropriate response. This "think-time" can be spent writing, also. (2) Students then turn to a partner and share their responses. (3) During the third step, student responses can be shared within a four-person learning team, within a larger group, or with an entire class during a follow-up discussion. The caliber of discussion is enhanced by this technique, and all students have an opportunity to learn by reflection and by verbalization.

THREE-STEP INTERVIEW: Common as an ice-breaker or a team-building exercise, this structure can also be used also to share information such as hypotheses or reactions to a film or article. (1) Students form dyads; one student interviews the other. (2) Students switch roles. (3) The dyad links with a second dyad. This four-member learning team then discusses the information or insights gleaned from the initial paired interviews.

SIMPLE JIGSAW: The faculty member divides an assignment or topic into four parts with all students from each **LEARNING TEAM** volunteering to become "experts" on one of the parts. **EXPERT TEAMS** then work together to master their fourth of the material and also to discover the best way to help others learn it. All experts then reassemble in their home **LEARNING TEAMS** where they teach the other group members.

NUMBERED HEADS TOGETHER: Members of learning teams, usually composed of four individuals, count off: 1, 2, 3, or 4. The instructor poses a question, usually factual in nature, but requiring some higher order thinking skills. Students discuss the question, making certain that every group member knows the agreed upon answer. The instructor calls a specific number and the team members originally designated that number during the count off respond as group spokespersons. Because no one knows which number the teacher will call, all team members have a vested interest in understanding the appropriate response.

Again, students benefit from the verbalization, and the peer coaching helps both the high and the low achievers. Class time is usually better spent because less time is wasted on inappropriate responses and because all students become actively involved with the material

aborative Learning

Collaborative Learning Structures and Techniques

Three-step Interview

Three-step interviews can be used as an ice breaker for team members to get to know one another or can be used to get to know concepts in depth, by assigning roles to students.

Faculty assigns roles or students can "play" themselves. Faculty may also give interview questions or information that should be "found."

A interviews B for the specified number of minutes, listening attentively and asking probing questions.

At a signal, students reverse roles and B interviews A for the same number of minutes.

At another signal, each pair turns to another pair, forming a group of four. Each member of the group introduces his or her partner, highlighting the most interesting points.

TOP

Roundtable

Roundtable structures can be used to brainstorm ideas and to generate a large number of responses to a single question or a group of questions.

Faculty poses question.

One piece of paper and pen per group.

First student writes one response, and says it out loud.

First student passes paper to the left, second student writes response, etc.

Continues around group until time elapses.

Students may say "pass" at any time.

Group stops when time is called.

The key here is the question or the problem you've asked the students to consider. It has to be one that has the potential for a number of different "right" answers. Relate the question to the course unit, but keep it simple so every student can have some input.

Once time is called, determine what you want to have the students do with the lists...they may want to discuss the multitude of answers or solutions or they may want to share the lists with the entire class.

TOP

Focused Listing

Focused listing can be used as a brainstorming technique or as a technique to generate descriptions and definitions for concepts. Focused listing asks the students to generate words to define or describe something. Once students have completed this activity, you can use these lists to facilitate group and class discussion.

Example: Ask students to list 5-7 words or phrases that describe or define what a motivated student does. From there, you might ask students to get together in small groups to discuss the lists, or to select the one that they can all agree on. Combine this technique with a number of the other techniques and you can have a powerful cooperative learning structure.

TOP

Structured Problem-solving

Structured problem-solving can be used in conjunction with several other cooperative learning structures.

Have the participants brainstorm or select a problem for them to consider.

Assign numbers to members of each group (or use playing cards). Have each member of the group be a different number or suit.

Discuss task as group.

Each participant should be prepared to respond. Each member of the group needs to understand the response well enough to give the response with no help from the other members of the group.

Ask an individual from each group to respond. Call on the individual by number (or suit).

TOP

One Minute Papers

Ask students to comment on the following questions. Give them one minute and time them. This activity focuses them on the content and can also provide feedback to you as a teacher.

What was the most important or useful thing you learned today?

What two important questions do you still have; what remains unclear?

What would you like to know more about?

You can use these one minute papers to begin the next day's discussion, to facilitate discussion within a group, or to provide you with feedback on where the student is in his or her understanding of the material.

TOP

Paired Annotations

Students pair up to review/learn same article, chapter or content area and exchange double-entry journals (see below) for reading and reflection.

Students discuss key points and look for divergent and convergent thinking and ideas.

Together students prepare a composite annotation that summarizes the article, chapter, or concept.

TOP

Structured Learning Team Group Roles

When putting together groups, you may want to consider assigning (or having students select) their roles for the group. Students may also rotate group roles depending on the activity.

Potential group roles and their functions include:

Leader - The leader is responsible for keeping the group on the assigned task at hand. S/he also makes sure that all members of the group have an opportunity to participate, learn and have the respect of their team members. The leader may also want to check to make sure that all of the group members have mastered the learning points of a group exercise.

Recorder - The recorder picks and maintains the group files and folders on a daily basis and keeps records of all group activities including the material contributed by each group member. The recorder writes out the solutions to problems for the group to use as notes or to submit to the instructor. The recorder may also prepare presentation materials when the group makes oral presentations to the class.

Reporter - The reporter gives oral responses to the class about the group's activities or conclusions.

Monitor - The monitor is responsible for making sure that the group's work area is left the way it was found and acts as a timekeeper for timed activities.

Wildcard (in groups of five) - The wildcard acts as an assistant to the group leader and assumes the role of any member that may be missing.

TOP

Send-A-Problem

Send-A-Problem can be used as a way to get groups to discuss and review material, or potential solutions to problems related to content information.

Each member of a group generates a problem and writes it down on a card. Each member of the group then asks the question to other members.

If the question can be answered and all members of the group agree on the answer, then that answer is written on the back of the card. If there is no consensus on the answer, the question is revised so that an answer can be agreed upon.

The group puts a Q on the side of the card with the question on it, and an A on the side of the card with an answer on it.

Each group sends its question cards to another group.

Each group member takes one question from the stack of questions and reads one question at a time to the group. After reading the first question, the group discusses it. If the group agrees on the answer, they turn the card over to see if they agree with the first group's answer. If there again is consensus, they proceed to the next question. If they do not agree with the first group's answer, the second group writes their answer on the back of the card as an alternative answer.

The second group reviews and answers each question in the stack of cards, repeating the procedure outlined above.

The question cards can be sent to a third, fourth, or fifth group, if desired.

Stacks of cards are then sent back to the originating group. The sending group can then discuss and clarify any question

Variation: A variation on the send a problem is to use the process to get groups to discuss a real problem for which there may be no one set answer.

Groups decide on one problem they will consider. It is best if each group considers a different problem.

The same process is used, with the first group brainstorming solutions to a single problem. The problem is written on a piece of paper and attached to the outside of a folder. The solutions are listed and enclosed inside the folder.

The folder is then passed to the next group. Each group brainstorms for 3-5 minutes on the problems they receive without reading the previous group's work and then place their solutions inside the folders.

This process may continue to one or more groups. The last group reviews all the solutions posed by all of the previous groups and develops a prioritized list of possible solutions. This list is then presented to the group.

TOP

Value Line

One way to form heterogeneous groups, is to use a value line.

Present an issue or topic to the group and ask each member to determine how they feel about the issue (could use a 1-10 scale; 1 being strong agreement, 10 being strong disagreement).

Form a rank-ordered line and number the participants from 1 up (from strong agreement to strong disagreement, for example).

Form your groups of four by pulling one person from each end of the value line and two people from the middle of the group (for example, if you had 20 people, one group might consist of persons 1, 10, 11, 20).

TOP

Uncommon Commonalities

Uncommon Commonalities can be used to foster a more cohesive group.

Groups get together and first list individual things about themselves that define them as people).

Groups then discussed each item, finding things that 1, 2, 3, or 4 of them have in common.

When the group finds an item that all of them have in common, they list that item under 4; when they find something that 3 of them have in common, the list that item under 3, etc.

TOP

Team Expectations

Some of the common fears about working with groups include student fears that each member will not pull their weight as a part of the group. Students are scared that their grade will be lower as a result of the group learning vs. learning they do individually. One way to address this issue is to use a group activity to allow the group to outline acceptable group behavior. Put together a form and ask groups to first list behaviors (expectations) they expect from each individual, each pair and as a group as a whole.

Groups then can use this as a way to monitor individual contributions to the group and as a way to evaluate group participation.

TOP

Double Entry Journal

The Double Entry Journal can be used as a way for students to take notes on articles and other resources they read in preparation for class discussion.

Students read and reflect on the assigned reading(s).

Students prepare the double entry journal, listing critical points of the readings (as they see them) and any responses to the readings, in general, or specific critical points.

Students bring their journal notes to class

Once in class, students may use their double entry journal to begin discussion, to do a paired annotation, or for other classroom and group activity.

TOP

Guided Reciprocal Peer Questioning

The goal of this activity is to generate discussion among student groups about a specific topic or content area.

Faculty conducts a brief (10-15 minutes) lecture on a topic or content area. Faculty may assign a reading or written assignment as well.

Instructor then gives the students a set of generic question stems.

Students work individually to write their own questions based on the material being covered.

Students do not have to be able to answer the questions they pose. This activity is designed to force students to think about ideas relevant to the content area.

Students should use as many question stems as possible.

Grouped into learning teams, each student offers a question for discussion, using the different stems.

Sample question stems:

What is the main idea of...?

What if...?

How does...affect...?

What is a new example of...?

Explain why...?

Explain how...?

How does this relate to what I've learned before?

What conclusions can I draw about...?

What is the difference between... and...?

How are...and...similar?

How would I use...to...?

What are the strengths and weaknesses of...?

What is the best...and why?