

Incorporating the UDL Principles to Create Equitable Online Group Work Assessment

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Introduction

The demand for pursuing higher education is increasing and becoming progressively diverse. Students with disabilities are attending higher education in increasing numbers in Canada, and the United States, (US) (American Council on Education, 2005; Fichten, Jorgensen, Havel, & Barile, 2006; National Center for Education Statistics, 2011; National Council on Disability, 2003; U.S. Government Accountability Office, 2009) This has created a need to understand the difficulties faced by individuals in achieving their educational goals. Though traditional classrooms provide training through an experienced, expert teacher who has thorough knowledge of the subject matter Bouton and Garth (1983) suggest that students learn in a passive environment, and have inadequate skills and experience. Collaboration with peers ensures that learning becomes interactive (Salomon 1992), promoting creativity and student engagement in activities that encourage learning (Bouton & Garth, 1983). Further research by Johnson & Johnson, (1975); Johnson et al., (1981); Bouton & Garth, (1983); Bouton & Rice, (1983); McKeachie, (1994) shows evidence of the advantages that can be achieved through peer-based methods and instructions.

Universal Design for Learning (UDL) is a framework that recognizes the diversity among learners and also maximizes their involvement in the learning process. This includes group work, assignments and projects. UDL is based on neuroscience and seeks to improve and optimize teaching and learning for everyone. It recognizes that every individual has diverse learning needs and is based on three fundamental principles, which are:

- Multiple means of representation (the way learners perceive and comprehend information)
- Multiple means of action and expression (the ways in which learners express what they know)
- Multiple means of engagement (the ways that learners are engaged and motivated to learn). (CAST, 2018)

UDL is a set of curriculum design and delivery principles, used by educators and policy makers to promote inclusive and accessible learning experiences for students through flexibility in curricular materials and activities. Many scholars whose research focuses on the benefits of UDL argue that it creates an accessible and welcoming learning environment for all students because it:

- Reduces barriers (situational, dispositional, institutional and epistemic) to learning
- Increases student engagement
- Empowers students to be self-directed
- Helps students to express their understanding of class content
- Helps meet Accessibility for Ontarians with Disabilities Act (AODA) standards

There has been minimal research conducted on the impact of UDL in group work processes or the assignment of group work exercises for students. The limited existing research shows that when the UDL approach is implemented into group work exercises, it has an impact on creating activities that are accessible to all students. According to a CAST study conducted in 2018, it is clear that in order for these activities to be accessible to all students, the UDL approach must be integrated from the inception of

the exercise, and be included in the preparation, execution, and completion of the design. UDL focuses on giving options, personal choices and decision making, because it understands that every learner is unique in the way that they comprehend and express their learning as well as how they are motivated.

The onset of the COVID-19 pandemic forced higher education institutions to make a dramatic shift to online learning. This quick shift brought both advantages and disadvantages to students. Students were forced to learn new technologies, and some could not afford the needed internet and computers required to participate in this new learning environment. Group work became a challenge because educators wondered how students were going to learn the required skills of working in teams for employment while trying to navigate the online learning environment. The challenges to group work include unclear expectations of the project and responsibilities of individual group members, lack of technology knowledge - especially when doing group work in an online environment - and convening entire groups for meetings and decision-making processes.

The Research Project “Incorporating the Universal Design for Learning Principles to Create Equitable Online Group Work Assessments”, sought to expand the research that has been done concerning the UDL approach and group work, focusing on how the UDL approach can be utilized to create equitable, accessible, and welcoming group work experiences in the online environment. The research was poised to answer two questions:

- A. How might we incorporate Universal Design for Learning (UDL) principles to support equitable participation of students in online group work assessments?
- B. How could a team contract serve as tools to facilitate equitable participation and assessment?

The project engaged faculty and students from the Developmental Service Worker Program and the Art and Design Fundamentals Program, in the School of Community and Health Studies, and the School of Communications, Media Arts and Design, respectively, along with an extensive review of available secondary literature to answer these questions.

Literature Review

An extensive review of the Literature was conducted on the topic, and the following themes were located:

- Universal Design for Learning (UDL) as a gateway to inclusive education

- The importance of incorporating UDL into the framework for online group assignments
- The similarities between online group work and in-person from both a student and faculty perspective
- Best practices for engaging in online group work
- The challenges related to online group work
- Team contracts create equitable online group work experiences for both students and faculty

Each theme will be explained thoroughly using the corresponding literature.

Universal Design for Learning (UDL) as a Gateway to Inclusive Education

Educational institutes have identified the importance of inclusive education (Curcic, 2009; Katz, 2012b). According to Katz (2012a), inclusion can be further sub-divided into two categories: academic inclusion and social inclusion. Academic inclusion is when students fully participate and interact with their peers within the learning environment. Social inclusion is where students interact with others while tackling real-life difficulties that could be encountered in educational institutions, whilst having a sense of belonging (Koster, Nakken, Pijl, & van Houten, 2009; Specht & Young, 2010, Katz, Porath, Bendu, & Epp 2012)

The concept of Universal Design is focused on reaching the goal of accessibility (Mace, Story, & Mueller, 1998). UDL recognizes that learners are diverse and offers accommodation through the provision of options so that learners can access, participate and advance within general education (Katz, 2013). According to King-Sears (2008), UDL acknowledges opportunities for inclusive learning through the means of learning, expressing and engaging with instructional activities. Providing information to students in writing, through video, and role play is a good example. Burgstahler (2009) argues that UDL offers enhanced opportunities to use technology to enable accessibility.

The Importance of Incorporating Aspects of Universal Design for Learning (UDL) Into Group Work Processes with Students

Collaboration is the process through which individuals come together to achieve a common purpose. Collaborative learning involves various aspects of studying by an individual, and as part of a learning group. It is a tool that can be used to help students in overcoming difficulties and render a more informal atmosphere to continue learning while adhering to the time-tested processes of obtaining imparted knowledge by a teacher. As Smith and MacGregor (1992) state, "In collaborative classrooms, the lecturing/listening/note-taking process may not disappear entirely, but it lives alongside other processes that are based on students' discussion and active work with the course material". This idea is further supported by The National Survey on Student Engagement (NSSE) "Active and Collaborative Learning", as one of five benchmarks of effective educational practices. The National Survey states that "collaborating with others in solving problems or mastering difficult material prepares students to deal with the messy, unscripted problems they will encounter daily" (NSSE, 2009).

This range of interpretations leads to a reinforced environment for learning in classrooms (American Association of University Professors, 2000), underpinning the necessity of a key UDL practice: implementing varying methods of teaching to cater to the needs of the students to provide relevant knowledge to meet the diverse needs of students, all materials, methods, and steps to use it, should be made available to all students (Sapp,2009).

The Endless Possibilities of Online Group Work

As technology advances, from colleges and universities are adopting more progressive attitudes to provide flexible learning opportunities for students. Given new pedagogical approaches, students may have the option to choose between either face-to-face or online learning methods, so that they can have a balanced work-life environment (Kemp & Grieve, 2014). This was also supported by Imel who mentioned that with ever-changing student lives and fast-developing technology, universities are increasingly offering more “flexible learning environments” (2002). Currently, online learning has become an integral part of the student experience within various countries and universities (Ituma, 2011; Otter et al., 2013; Tucker et al., 2013).

With the recent change to online education environments, the standard of online education will assumingly improve. There is a higher chance to engage students in more comprehensive discussions and achieve improved learning outcomes. Online education has also been found to improve students' participation and increase the effectiveness of education delivery in comparison to the traditional ways of face-to-face teaching and learning (Smith and Hardaker, 2000; Alexander, 2001). According to Balluerka et al., (2008) professors can facilitate and manage the students learning more effectively within the online environment rather than overwhelm them with information that has been observed with in person teaching.

Analytical skills needed to succeed in future careers are shown to be developed during group projects and group discussions. Such opportunities contribute to the development of conflict resolution skills, teaching students to deliberate during communication. Group work also inculcates skills of teamwork, meeting management, time management, presentation skills and learning to respect and recognize diverse thoughts and ideas. It does not matter if the group work undertaken is accomplished online or in person, these skills are developed by the learners. Such online activities have been instrumental in connecting people working remotely and have facilitated the skills of working together from a distance, an essential skill in the remote workplace environment (Reynolds, 2021).

Best Practices for Engaging in Online Group Work

Online group work should be integrated into course learning outcomes, especially because students' motivation, satisfaction and continued enrolment are dependent on it. Burke, (2011) reiterates that the first step is to review and align course learning outcomes, and how the group work can achieve those. Caution needs to be exercised when the activities are not clearly defined and distributed among students since it could lead to arguments over task responsibilities, and some students resorting to free-riding (Davies, 2009). A free rider is a term used to describe anyone who doesn't take on the responsibilities of group work but benefits from being part of the group. Another

important factor of effective group work is that all members understand the importance of interdependence in achieving success, not just for the individuals but for the group as a unit. In the words of Barbara Gross Davis, “mutual reliance is a powerful motivator for learning” and group work is the most effective when “each member feels responsible and dependent on the others and when no one student can succeed unless all in the group succeed” (2009).

The size of the group also needs to be given due consideration as individuals of a larger group may not contribute equally towards the success of the group project and large groups also increase opportunities for free riding (Davies, 2009). On the other hand, a group of just two students lowers possibilities of free-riding but also is devoid of the benefits such as collaboration or creativity, which are achieved by being a part of a group (Csernica et al., 2002). Therefore, groups of four to five students become the optimal size, allowing students to participate responsibly and contribute equally towards the group's success (Davis, 1993; Hassanien, 2006). Another aspect that needs attention is the decision regarding the premise on which the students should be assigned to groups.

Strategies for group formation that were most prominent in the literature are as follows:

Random Selection

It is used quite frequently and leads to diversity in groups because it focuses on the individual strengths of group members (Davis, 1993). It may also create challenges in communication as the members are not known to each other (Soetanto & MacDonald, 2017). Collaborative classrooms and interactions encouraged by educators can be used to break the ice as well as improve interpersonal relations and communication between group members (Barfield, 2003). Random selection is a method that lacks aim and direction.

Students' Choice

This method allows students to choose their groups, potentially solving communication difficulties, as students are more likely to choose friends. It creates another challenge as the group may spend the time allotted on socializing instead of completing given assignments (Cooper, 1990). However, Hassanien (2006) argues that students who choose to be part of a group of self-selected members are more productive and learn better from their peers. From a UDL perspective, this option is recommended as it allows for personal choices, decision making and puts the student ultimately in charge of their learning.

Matching Characteristics

The flocking method is another option for creating online learning groups. This is where instructors can match the students with identical expectations regarding necessary efforts and their availability to complete the project to garner desired outcomes. According to Harding 2018, this technique reduces ‘free riding’ and improves individual contributions to the given assignments.

Role Selection

Different roles associated with the project can be designed by the teachers and the students can choose according to their inclinations (Kaufman, Sutow, & Dunn, 1997; Johnson, Johnson, & Smith, 1991). Some of the roles that can be created are facilitator, note-taker, recorder, etc., but these roles can be devised according to the required project learning outcomes or assignment tasks involved and the subject of study (Millis, & Cottell, 1998; Johnson, Johnson, & Smith, 1991). There are several opportunities for students who work together in small groups from early undergraduate education. Students not only polish their communication skills, build trust, reduce stress (Topham and Russell 2012) and improve interpersonal communication (Russell 2010), but also achieve higher academic outcomes. Working together creates networking for the students, and they gain socially as well as professionally. Apart from these internal factors including group dynamics, several external influences affect the learning outcomes from group activities. These external factors include personal and employment commitments for group members and individual access to technologies required to perform online group work such as computers, tablets and smart phones. Lizzio and Wilson 2005; Dolmans and Wolfhagen 2005; Norman and Schmidt 2000 et al argue that the involvement of the faculty and their support in group assignments have a marked impact on the experiences of the students in a group. This is extremely critical in groups that are facing difficulties (De Grave et al. 2001).

Challenges Related to Online Group Work for Students and Faculty in a Community College Setting

People who want to complete their education or add to their skill sets while they juggle other responsibilities or work several jobs tend to seek opportunities through online courses offered by community colleges. This distinctive feature of learning has made community colleges a popular choice (Summers 2003 and Muse 2003). Allen and Seaman (2005) suggest that almost 80% of the online course content is delivered without any interpersonal interactions between students and teachers. The highly intensive course content and the short duration of the courses make it difficult to retain the knowledge (Lui, Gomes & Yen, 2009) but at the same time, there is a lack of research and understanding regarding the unique characteristics of students who succeed, given the challenges of learning through online courses of community colleges.

Several challenges are integral to online group work, but these three issues are discussed quite often in literature. They are as follows:

- Student Antipathy towards Group Work
- A lack of Essential Group-Work Skills
- Lack of Contribution from Group Members

Monitoring Student Antipathy Towards Group Work

Smith et al. 2011; Tutty and Klein 2008 conclude that there is aversion to group online activities among students who are currently participating or have completed their educational program online, as compared to working in offline personal groups. Online groups of students experienced unforeseen difficulties and additional responsibilities (Du, Xu & Fan 2015). Students become increasingly dependent on each other, thus, defeating the purpose of such group work, which expects students to work in individual capacities, and develop better skills (Piezon and Ferree 2008). Therefore, a student

must not only allow time for individual efforts but also aim to be a productive member of the online group. Other difficulties include students working in different time zones. Students are required to educate themselves on the different technologies used, including Zoom, and internet connections can vary in quality depending on geographical location and service provider. Some students are hesitant about sharing their points of view for fear of ridicule, and such a situation would add further pressure, and increase student discomfort (Thompson & Ku (2010)). This has an undesirable consequence on learning outcomes for group work. MacNeill, Telner, Sparaggis-Agaliotis, and Hanna (2014) believe that online group work should not be undertaken for short interactions and that online groups are ineffective due to the learning curve that is needed to learn the technologies required to participate. These factors create the need to search for features that would help improve the online learning environment of the students.

A Lack of Essential Group-Work Skills

Individuals that are part of a group come from different backgrounds, have varied expectations of the learning environment and display dissimilar emotional capabilities and levels of engagement as pointed out by Jackson et al. (2014). These factors pose challenges to effective online group work. Lack of participation is a major hurdle that needs to be overcome in group work. Muuro et al., (2014) studied the challenges faced by students working online and concluded that almost 54% of students do not participate in online group activities. Another issue is the lack of feedback either from teachers or peer group members. Lack of experience or different levels of skills among the students engaged in online group work does not have a negative effect on their performance.

Group dysfunction is another challenge that is faced by online groups. Most groups undergo this common challenge, due to the lack of guidance or sense of accountability. If all members of the group do not have similar commitments toward the work on hand, the group will be dysfunctional. For example, students may not show up to scheduled meetings or be ready to take charge and thus the work submitted does not meet the standard of the project. Also, if some students do accept their responsibilities, and decide to complete the tasks, the added stress and pressure take away the pleasure of doing the work, and thus the desired learning environment, and experience is negatively impacted (Reynolds, 2021).

Lack of Contribution from Group Members

When students rely on other group members, it gives rise to unequal contributions by student members even as they get awarded the same grade. These individuals often put in minimal effort in completing the project or only a handful of students do the whole project. As described, the literature terms these students 'free-riders' and argues that they often come unprepared to meetings, do not participate and depend on others (Gallagher, 2009). They are frequently absent from group meetings and group work during or after class hours. (Auler, 2013). Researchers suggest that 'free-riding' can be avoided by using end-of-term peer evaluations and frequent check-ins by the instructor during the group work process (Bacon, 2005; Herreid, 2003).

The Value, Purpose, and Best Practices for Team Contracts when Engaged in Group Work

Team Contracts are collaboratively written agreements that achieve a common learning outcome and the work undertaken by all the members of a group. Team Contracts contain details regarding deadlines to be met, the expected quality of work, reporting on work done and pre-decided repercussions if non-observance of the rules occurs (Schultz, 2021). They also assist with outlining individual responsibilities for a group project and describes how essential group processes will be handled. For example, dealing with conflicts between group members. Team Contracts create a sense of responsibility amongst group members, though they do not have any legal holding (Faulkner 2014). The idea of a Team Contract is supported by Bruns & Humphreys (2007) as a document that can be built upon “core capabilities,” and manifested in educational institutions. Team Contracts facilitate student learning and understanding of new technologies.

The Digital Handshake Group Contract (DHGC) is another term used to describe a digitally agreed upon contract. The DHGC helps to inculcate a moral imperative and results in an encouraging fairground which provides satisfying learning (Hesterman, 2016).

The Benefits of Team Contracts

The quality of group work improves significantly when group contracts are utilized. Students can voice their opinion regarding issues that were once too sensitive such as handling group conflicts. Additionally, students can encourage each other to put themselves into challenging scenarios, and discuss experiences that will inspire and broaden individual perspectives (Schultz, 2021). Team Contracts must be done at the beginning of a project because they help to guide group members with the processes and provide a pathway to ensure completion of the assignment. Reynolds (2021) emphasizes the importance of explaining the value of team contracts to the students within the first few classes. Due to the shift online, in which students must study virtually, they must be made aware of the benefits of team contracts during the initial stage.

With the introduction of Team Contracts, students that are studying online can divide the work and document expectations. This will also allow faculty to focus on a formative-based learning method that will have a more rewarding and collaborative learning outcome (Schultz, 2021). Team Contracts are useful for both online and in-person group projects.

The literature review clearly demonstrates the challenges with group work projects, especially within the online environment. It demonstrates that the integration of the UDL strategies, and a focus on creating individual team contracts, allow for equitable, accessible and welcoming online group work experiences for all students.

Methodology

The project was intended to be a two-part research design involving surveys and a co-creation activity involving the development of a Team Contract that would support students from DSWP 119 Community, Family and Roles, a course within the

Developmental Service Worker Program, and students from VISU 121 3D Studio, a course within the Arts and Fundamentals Program with completing their assigned group work project. The Research Team consisted of a Primary Investigator, Faculty Co-Investigators, and a Student Research Assistant

A Participative Approach was originally planned, however, the unforeseen job action by the faculty union, forced the Research Team to alter its data collection methods. The lead researchers instead adopted a field observational approach as well as surveys to collect data. Separate surveys for both faculty and students offered open-ended questions about their experiences engaging in online group work. The survey opened with profile questions to ensure that respondents were students or faculty members from the two programs identified for the research project, and had been assigned to or participated in group work during their programs. If they did not identify with this criterion, they were not invited to complete the rest of the survey.

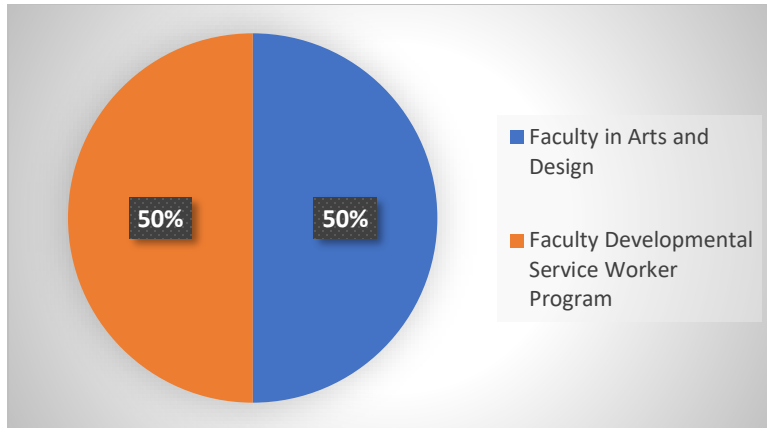
The faculty survey was distributed to faculty from the two programs via their program chairs and coordinators. The faculty survey was open for approximately one month. The student survey was broadly distributed through program chairs, coordinators and the primary investigator via a list of students obtained through the faculty co-investigators. The student survey was distributed twice. The first time the survey was open for a month. The second was opened for two weeks. The purpose of the second survey was to increase response rates. The faculty survey was not distributed a second time, as the research team thought that doing so would not increase responses. It was felt that the low response rates to the faculty survey was likely due to the faculty union labour dispute, and the fact that responding to the survey was not part of faculty job responsibilities and no compensation was offered for completing it. All correspondence on the surveys were done via emails and all surveys were administered through Qualtrics, which yielded twenty-responses from students and eight from faculty for a total of thirty-five respondents.

Students from DSWP 119 Community, Family and Roles, a course within the Developmental Service Worker Program, and students from VISU 121 3D Studio, a course within the Arts and Fundamentals Program were chosen because the Faculty Co-Investigators teach the identified courses. Students were asked to participate in a team contract building exercise that would outline agreed upon group conduct, processes and the overall completion of their online group assignments. These two programs were selected for the project, because of their vast differences in course development, design, and delivery in an attempt to demonstrate that UDL principles and the application of a team contract for online group work can be applied to any academic discipline or subject. Thirty-six students were involved in development of the team contracts from the specified Developmental Service Worker Program course, whereas, fifteen students were involved in the same process from the course in the Arts and Design Fundamentals Program. For more information about the particular student group assignments, and how they were evaluated, please see Appendix A and B. The Faculty Co-Investigators completed short reflections that were utilized for data (See Appendix C and D). Their reflections indicated findings that were found in the analysis of surveys and the literature review. All ethical protocols were followed in accordance with involving human subjects in research, and verified by the Centennial College Ethics Board.

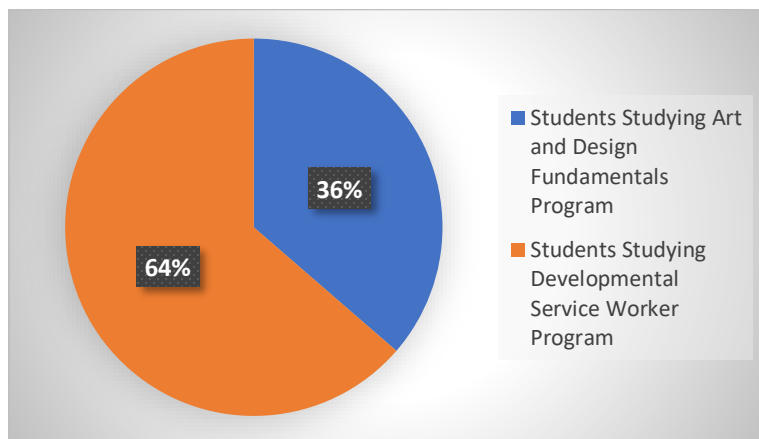
Profile of Survey Respondents

The surveys yielded a total of thirty-five respondents: 6 faculty responses and 22 student responses. The profile is illustrated in the below diagrams:

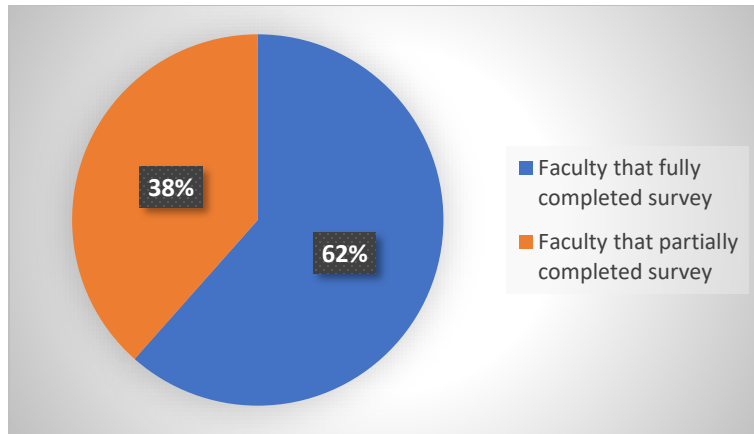
Total Percentage of Faculty Representing Each Program



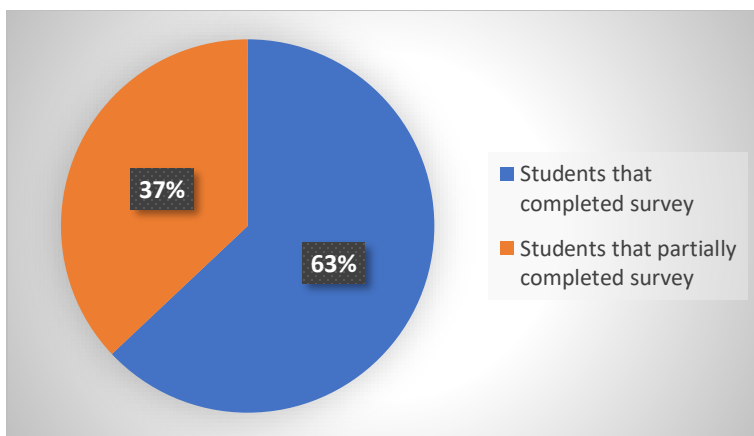
Total Percentage of Students from Each Program



Percentage of Faculty who Completed the Survey Versus the Percentage of Faculty that Partially Completed the Survey



Number of Students that Completed the Survey Versus the Number of Students that Partially Completed the Survey



Data Analysis

All sources of qualitative data were manually coded into theme using Microsoft Word, where established coding techniques were utilized. Data from partially completed surveys was also coded.

Findings

The findings from the faculty reflections resulting from the team contract activity, and the survey data were largely qualitative because the focus was on student and faculty experiences, opinions and perspectives on group exercises emphasizing the online environment. The data was analyzed for recurring themes and used to respond to each research question guiding the study.

A. How might we incorporate Universal Design for Learning (UDL) principles to support equitable participation of students in online group work assessments?

To effectively respond to this question, the data was categorized into the three principles to demonstrate how it supports the equitable participation of students in online group work assessments. The principles are as follows:

- **Multiple Means of Representation-** Participants spoke about the various ways that they received and gathered information during group work exercises. This included various technologies such as Google Docs, WhatsApp and Zoom. These technologies allowed them to share information in real-time and ensure a mutual understanding among group members is established regarding the project. One participant who responded to the Survey mentioned, “What the other classmates and I did was create a shared Google Doc. (Or Google Slides, etc. depending on the assignment). So, we could all edit the same document at the same time. And then one person would share the doc on the screen, so we could all see our edits in real-time, and discuss it”.

Participants also stressed the value of more traditional ways of exchanging and gathering information during group work exercises. A Survey participant discussed the benefits of these methods when they remarked, “I’ve emailed some classmates and eventually we exchanged phone numbers and I think having their phone number has helped me better communicate with them”.

Breakout Rooms also proved to be beneficial for online group work exercises from both faculty and student perspective because they provide spaces free from distractions that result from the conversations of other groups and give the faculty the opportunity to render support and information that is meant for an individual group. During the co-creation activity with their class, one faculty commented in her reflection that, “The advantage of on-line delivery is a privacy of breakout room where professor can help student one-on one and share diverse sources to accommodate student needs (differentiated teaching)”.

- **Multiple Means of Action and Expression-** Effective communication among group members and their instructor was a prominent factor in determining a successful outcome of a group work exercise. Survey respondents stated that ongoing and open communication with instructors was required in order to assist with conflict resolution and other concerns related to project completion. One student that responded to the survey confirmed that, “Keeping open and clear communication with the Professor. If the Prof is not aware of sticky situations and failure by members to participate, then marks cannot be awarded fairly”. Maintaining effective communication was also a precursor for commitment and engagement towards project completion for students. Effective communication also include the ability to read non-verbal cues and body languages, an aspect that participants said was difficult to do online, especially when students would not turn on their cameras. Many participants commented that the lack of synergy within groups was often due to ineffective communication skills. Technology is an effective way for group members to share and screen information but, it can also impede on an individual’s ability to communicate with the group members, as one

student survey participant put it – “It’s more (about) how hard it is to communicate with (Z)oom”.

- Multiple Means of Engagement- Engaging in group work exercises online, gives students the opportunity to participate without having to worry about finding a common location for group members to meet. As one student put it that it is “easier to find times to meet since there is no need to commute to an agreed meeting place”. Students can now participate from any geographical locations or time zones. This allow students a tremendous amount of flexibility, but still presents challenges, especially when all group members are required to be online at the same time for decision making in order for the group to move forward. This becomes even more difficult when students are required to meet outside of class time to get projects completed. One student commented about the specific situation and the challenges that it creates for them. “The group (work) is done during our own time. We have other responsibilities as adults such as making a living. We need to work and manage our time instead of squeezing everything to be in a group at a particular time”. This suggests that time should be given in class for group members to meet and for project completion.

B. How could a team contract serve as tools to facilitate equitable participation and assessment?

Participants did not specifically address the notion of a Team Contract for group work exercises or how it would assist with the overall group process and project completion. However, they did discuss various components and aspects of such a contract, as indicated in the Literature Review above. Students stated that they appreciated when they were assigned roles that were based on their strengths during group work exercises. One student echoed this appreciation when they mentioned in the survey, “Personally, I thrive on organizing groups and assigning duties. As well as, helping everyone in the group”. Survey respondents also stated that it is hard to get organized and remain committed to the project, especially in the online environment because they do not have the in-person group members to keep them motivated. Furthermore, participants spoke about the need for a process or mechanism to better deal with conflict amongst themselves, especially members who does not contribute. “In every group project (i)n general, there is at least one member who doesn't contribute to the group”. When the participant spoke of this, they also mentioned that this situation is very stressful for them. Participants spoke about the need for mutual agreements related to project outcomes and group processes. Mutual agreement through open and honest discussion with group members can lead to a positive experience and success for all group members. One participant reinforced the need for mutual agreement when they said, “we all participate(d) equally and if we can come to one agreement rather than one person putting the effort it’s better for everyone”. Another student who responded to the survey commented that “Whether it was right or wrong, we all agreed we are here to learn and not judge each other”.

Discussion

The following recommendations from the study and literature aim to assist faculty with group work exercises that will optimize personal choice by providing a multitude of options for students. They will also assist students to create an enriched learning outcome while involved in online group work exercises. The recommendations are categorized into the following themes, preparing, implementing and assessing these exercises and also align with the three principles of UDL.

Preparing for Group Work

Group projects should be developed that allow groups to complete an assigned project in phases, allowing students to get feedback from the instructor as each project component is completed. This allows for ongoing and clear communication between the instructor and the individual groups and continued communication between group members. It also gives students the opportunity to ask the instructor questions before moving onto the next phase. Developing a rubric with clear expectations indicating the criteria for different grading levels will assist students with clarity on the project outcomes.

Instructions for group projects should be given in multiple formats, some of these formats may include writing and video. This will ensure that students fully understand what is expected of them. By providing the instructions in multiple formats, it accommodates various ways that diverse learners receive information.

Best practices for engaging with groups should be shared by the instructors with students, including a discussion on strategies for handling conflict within groups. This should be mentioned in the Team Contract as it will assist groups in being successful. Preparing students for the potential of conflict within groups will enable groups to address any issues without allowing them to escalate. During this initial discussion students should have the opportunity to select group members, ensuring that there are no more than four members per group. Four people in a group is ideal because it allows for smooth group processes and project completion. Group members should also introduce themselves and exchange contact information if desired.

During this first group meeting, instructors should give students the opportunity to create a team contract that will outline group processes and discuss the plan for completing the overall project objective and outcomes. Groups should create their own team contract and instructors should allow groups flexibility and decision making over how they will execute and deliver the project outcomes. The team contract should include the following components:

- Purpose and learning outcomes for the project
- Responsibilities of individual group members
- Preferred online platform for meetings
- Group meeting dates and time
- Process for conflict management

The contract should be signed by all group members and obtain the approval and signature of the instructor. All signatures on the team contracts should be dated. The purpose of the contract is to organize the group and establish strategies and processes

that will allow the group members to thrive, because it is designed to maximize the learning styles and of individuals within the group. Maximizing the diverse learning styles and needs is at the core of UDL.

Implementing Group Work

Instructors should initiate ongoing consultations with groups throughout the duration of the exercise so that students feel supported. It is important that instructors provide time in class for groups to connect to complete projects and problem solve potential solutions together. During these discussions, groups can also constructively address group members who are not completing their individual tasks and use the conflict management process outlined in the team contract to resolve the issue. If conflict cannot be resolved, the group can bring it to the attention of the instructor who can assist with strategies to find a resolution.

Instructors should also be prepared to provide support and instructions on how to use interactive technologies commonly sought for online group exercises. These technologies include Zoom, Padlet, Teams, WhatsApp, etc. Instructors should be prepared to support students with troubleshooting solutions or be able to provide them with resources that can address their concerns. This will ensure effective communication during the group work exercise.

Assessing Group Work

Students should have the opportunity and be given time by their instructors to have a debrief session with their group members to reflect on the overall group process. The reflection should include a discussion on what went well and strategies that can be improved upon for future group work exercises.

The formal feedback and evaluation processes should include a self-reflection and an anonymous peer evaluation component. The self-reflection evaluation and peer evaluation processes are critical because they allow for a deeper analysis of an individual's contribution and the overall processes of the group, because of the close involvement that students had with themselves and others in the project. These components of evaluation are fundamental to UDL. Instructors can also add the component of a presentation within the project that helps define various skills that would be essential within the work environment and also help the instructor in the student's contribution and understanding of the topic area. The presentations can be done in group or individual format, which can be decided on during Team Contract creation. Presentations could also be delivered in various ways. Some of these ways include in-person or via video. The students should reserve the right to choose the method of delivery and their chosen method should also be indicated on the team contract. By giving them this flexibility and preference, it is further reinforcing UDL.

Thoughtfully preparing for, executing and completing online group work exercises on behalf of faculty and students will enable success and give students the opportunity to learn skills that are critical in the academic environment, as well as transferable skills that are needed in the work environment. Appendix C and D are the summarized recommendations converted into tips and desegregated by faculty and student.

Conclusion

It is evident that students are looking for experiences and opportunities that lead to increased academic success and improved growth in their current or eventual career paths. The integration of UDL practices into online group work can occur by providing flexibility and multiple options by way of design, delivery and deployment of online group exercises. The need for flexibility and multiple options can be largely rectified by the creation of individual group team contracts. The integration of UDL, with an emphasis on developing team contracts, creates equitable group work experiences and exercise that are accessible for all.

Limitations of the Study

There were numerous limitations to this study. Survey data among faculty and students was extremely limited, and thus made it difficult to make any reliable conclusions. The faculty reflections from the Team Contract activity for students may have contained biases, because they relied heavily on the perspectives of the faculty who wrote them. The amount of time students and faculty spend online due to the transition to online learning resulting from the COVID-19 pandemic, most likely impacted survey response rates, because individuals may not have wanted to spend additional time online completing surveys. Some students and faculty are residing in different countries with various time zones that may have impacted their participation in the study. The co-creation activity needs to be completed with students from diverse backgrounds and enrolled in different programs to make any conclusive findings.

The limited amount of literature directly related to the topic resulted in the use of literature from several decades. Team Contracts and their benefits for group work, especially in the context of the online environment, were not highlighted in the study, but were present in the literature as a best practice. This is likely due to the need to change the research design halfway through the study and remove the co-creation activity. The labour dispute and resulting work-to-rule by the faculty union most certainly impacted the faculty response rates to the survey, because participation was seen as outside of their job responsibilities and they were offered no additional compensation for completing it. Individuals could only complete the surveys online, providing other options for completion may have increased the response rates.

Directions for Further Research

Several approaches can be taken to further examine the relationship between UDL and creating equitable approaches for online group work. With larger sample sizes, data collection instruments could be designed in a manner that would allow statistical analyses to be conducted (e.g., Likert-scaled questionnaires). The use of a different study design, such as a quasi-experimental design, could also be helpful. For example, in a multi-section course, one class section could be exposed to UDL inspired online group work while a second-class section could be taught more traditionally. This would allow for data from an experimental class to be compared to a control class and would help to further highlight the impact of UDL-inspired delivery. Such examination could also include a comparison of student learning outcomes (e.g., grades, student-perceived levels of understanding) across class sections designed with and without

UDL in mind. Future studies may also be aimed at further exploring trends observed in this study, such as the reasons behind the choices that students made in the course.

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Appendix A: Co-Creation Activity Faculty Reflection

Introduction

This pilot collaborative research assignment “Asset Based Community Development Presentation” was introduced in course DSWP 119 Community, Family, and Roles. Delivered in a hybrid format, this course consists of 2 hours of online asynchronous and one hour of online synchronous learning. DSWP 119 is in the second semester of the Developmental Services Worker Program (DSW).

The DSW program is a two-year diploma program where students learn to become professionals in the Developmental Services Sector, supporting individuals with diverse disabilities, as a principle of individualized support for people with disabilities, DSW students are introduced to Universal Design (UD) and Universal Design for Learning (UDL) early in the DSW program; both as a highly effective and natural way to provide support the people they serve and as a delivery method of the program. The DSW program faculty are highly committed to UDL.

The class consisted of 36 students age group 18-50+. The students collaborated in groups of 3-4 students. Group Members were randomized using the Learning Management System. The assignment description, rubrics, and group contract guide were created and introduced by Professor Kira Machado.

During the introduction of the co-creation of the group contract activity, the students were given a series of questions to answer individually and then went into Zoom breakout rooms to share their personal reflections. The students were then asked to complete a group contract. A sample group contract was provided but students were not required to use this outline. The professor was not part of the creation of the contracts as these belonged to the group. Students were instructed that they would not need to share the contract with the professor unless they chose to.

The assignment required students to work in groups to create an Asset Based Community Building Project to be shared via the course Weebly site. Creativity is encouraged. This assignment will be given out during week 9 and will be submitted by the beginning of week 12. During week 12, students shared their presentations with the class.

The assignment expectation was outlined as such:

Your written work can take the form of prose, charts, diagrams and lists, PowerPoint, or video. The only limit is your creativity.

Ensure that your project is well organized.

Please ensure you start early. **Work with your group and follow your group contract to ensure all members are aware of your deadlines and expectations.**

The last few weeks of class time are designated for presentations of your community work. **For this reason, you cannot hand in your project late!**

Aim: Tell the story of your community and community building to your classmates in a way that is informative yet motivating.

To complete the assignment, the students collaborated on the project during online synchronous class time on Zoom (3 one-hour sessions).

In addition to verbal feedback, the students received written assessments. The students presented their work to the whole class group in the synchronous Zoom classroom.

Co-creation Questions:

- **1-4 specific things** that you know you will want to do in your group (i.e., typing the lesson plans, making sure supplies are organized, researching, finding materials, creating visual aids, speaking upfront).
- **Four ground rules** that you believe will benefit your group and help you function better (i.e., giving each person a chance to speak whenever making decisions and assigning a member who oversees making sure that happens, updating everyone twice weekly via email or phone, etc.)
- **Three things** that you have experienced in groups that you DON'T want to happen; along with how you think it can be prevented.
- **Finish this sentence...** "I function best in groups when..."
- **Finish this sentence...** "I really hope our group can..."

Sample Team Contract

Team Name: _____

Date: _____

GOALS: What are our team goals for this project?
What do we want to accomplish? What skills do we want to develop or refine?

EXPECTATIONS: What do we expect of one another regarding attendance at meetings, participation, frequency of communication, the quality of work, etc.?

POLICIES & PROCEDURES: What rules can we agree on to help us meet our goals and expectations?

CONSEQUENCES: How will we address non-performance regarding these goals, expectations, policies, and procedures?

We share these goals and expectations and agree to these policies, procedures, and consequences.

Team member name

Team member name

Team member name

Team member name
Evaluation Criteria

Table 1: Rubric

	Level 4	Level 3	Level 2	Level 1
Purpose	Introduces and presents three community assets effectively and clearly; information learned is readily apparent to the reader.	Introduces and presents fewer than three community assets effectively and clearly and/or information learned is not readily apparent to the reader.	Introduces and presents community assets somewhat effectively; presentation has a clear purpose but may sometimes digress from it.	Introduces and presents information poorly; purpose is generally unclear.
Development and content	Develops presentation with exceptional care, including all three topics; provides a balanced presentation of relevant information of each item learned and shows a thoughtful, in-depth analysis of the topics; reader gains insights.	Develops presentation with exceptional care but included fewer than three topics and/or information displays a clear analysis of the significant topics; reader gains some insights.	Does not fully develop presentation as assigned; analysis is basic or general; reader gains few insights.	Presentation is undeveloped and/or does not relate to the assignment and includes very little discussion of the issues discussed in the course; analysis is vague or not evident; reader is confused or may be misinformed.
Cohesion and insight	Ideas are supported effectively; student shows clear evidence of having understood and synthesized three-course concepts; the demonstration of	Ideas are generally supported; student shows evidence of having read, understood, and correctly applied the course concepts; demonstration of	Many ideas are unsupported, and it may not be clear whether the student has understood or synthesized the concepts; demonstration of knowledge is incomplete.	Presentation is incoherent and shows little or no insight; there is no evidence that the student has understood course concepts.

	knowledge is exceptional.	knowledge is clear.		
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Findings

No student groups chose to share the Group Contract with the Professor. There were no known issues with the completion of the presentation by the groups.

One issue noted by the professor was that it was difficult to manage the expectations of the group members while maintaining the confidentiality of all students. For example, some students have ISP accommodations that state they may need to miss class. As groups were working on the assignment during the synchronous class time, there was a perception by some group members that this individual was not participating or supporting the group. As the student chose not to disclose information to the group it was difficult to manage these expectations.

The professor asked for voluntary feedback after the completion of the assignments. Some feedback received was the following:

“This was helpful in accepting others’ ideas, someone not sharing their ideas, someone who does things without consulting the group. We all participate equally and if we can come to one agreement rather than one person putting the effort it’s better for everyone”

“I function best in groups when everyone has a chance to put their ideas on the table and we all share in the work’

“Whether it was right or wrong, we all agreed we are here to learn and not judge each other”

Summary

Overall, the co-creation of the group contract was perceived well by students. Despite the challenges of online learning during the COVID-19 pandemic students worked together to create exceptional examples of Community Development. More consideration could be given to how to support mixed ability groupings, especially in the online environment where instructors are not able to see group dynamics playing out in the classroom, i.e., non-verbal communication, body language, etc. With most students keeping cameras off in the synchronous online classroom, it is very difficult to support the development of a community of learning.

Appendix B: Co-Creation Activity Faculty Reflection

Introduction

This pilot collaborative research assignment “Important Sculptors and Inventors” was introduced in course VISU 121 3D Studio in DLO format in the second semester of the Art and Design Fundamentals program (ADF) at Story Arts Centre of Centennial College.

The Art and Design Fundamentals (ADF) program is a one-year certificate program allowing to nurture artistic talents and develop creative problem solving, and practical and entrepreneurial skills in visual arts and design.

The class consisted of 24 students aged group 18 to 30. The students collaborated in groups of 3-4 students. They selected their group members. The assignment description, rubrics, and rules of collaboration were created and introduced by Professor Veronika Ticha.

The students collaborated on the project during class time (2 three-hour classes) and completed the rest of the work at home. The students divided responsibilities according to four evaluation criteria list of resources, notes, explanation of creative process and artist’s contribution to society, and reflection on favorite sculptures) between individual group members.

The project requirements were to create a minimum 500 words research paper and present it to class. The estimated time for taking notes and writing a research paper was about 9 hours.

The students were asked to explain the creative problem-solving process of an important sculptor or inventor, establish the time period and scope of their work, analyze their favorite sculpture, and reflect on their own experience with sculpting. My passing grade was a C 60%.

In addition to verbal feedback, the students received written assessments with rubrics. The students presented their work to a larger audience and collected written feedback about how to improve their work.

Evaluation Criteria

In-class group collaboration				
	Excellent (A-A+)	Very Good (B-B+)	Good (C-C+)	Unsatisfactory (D-D+)
List of resources 5%	The student lists several additional resources	The student lists at least three additional resources	The student lists at least two additional resources	The student doesn't list any resources

Notes 15%	The student writes comprehensive notes	The student writes good notes	The student writes some notes	The student doesn't write any notes
Written explanation of the creative process and artistic contribution (what is the artist known for) 40%	The student shows comprehensive knowledge and understanding of the artist's creative process and contribution.	The student shows very good knowledge and understanding of the artist's creative process and contribution.	The student shows satisfactory knowledge and understanding of the artist's creative process and contribution.	Unsatisfactory (below C) The student doesn't show sufficient knowledge and understanding of the topic.
Written reflection of three favorite sculptures 15%	The student uses design language to reflect on their choices	The student uses some design language to reflect on their choices	Student reflects on their choices	The student doesn't reflect on their choices

Findings

- The students have a wide range of abilities that is difficult to manage pedagogically.
- The students have a wide range of abilities that is difficult to manage pedagogically.
- The course focuses on continuous one-on-one feedback and support.
- 30% of students in the classroom have learning disabilities.
- Student leaders support week group members.
- Group work supports natural peer mentorship.
- The advantage of online delivery is the privacy of the breakout room where professors can help students one-on-one and share diverse sources to accommodate student needs (differentiated teaching).
- Peer evaluation.
- Self-reflection.
- Student presentation to a larger audience.

Summary

This pilot research assignment confirmed several advantages of student collaboration on projects including natural peer mentorship, peer motivation, peer evaluation, and self-reflection.

The research couldn't be completed because due to COVID pandemic issues. Several students chose not to participate in collaborative learning (10%) or stopped attending classes due to mental health issues.

Appendix C: Online Group Work Exercises (Tip Sheet for Faculty)

The below tips will help you to organize students effectively so that they can be successful when engaged in online group work activities or assignments. The tips have been categorized into the following topics:

Preparing

- Design group that allow students to work in phases
- Groups should develop a Team Contract
- The following should be included in the Team Contact:
 - Purpose and learning outcomes of the project
 - Responsibilities of individual group members
 - Deadlines for completion of individual tasks
 - Preferred online platform for group meetings
 - Meeting dates and times
 - Process for conflict management
 - Date and signature of group members and instructor
- Incorporate components that allow groups to make choices
- Provide instructions in multiple formats, including video

Implementing

- Provide ongoing consultation with groups
- Provide time for groups to connect and accomplish tasks
- Offer and provide instructions on how to use interactive technologies to assist with the group work process and completion of tasks. Examples include Padlet, WhatsApp and Zoom

Assessing

- Allow for self and peer feedback and evaluation processes

Appendix D: Online Group Work Exercises (Tip Sheet for Students)

The below tips will help you to be successful when assigned an online group assignment or activity. The tips have been categorized into the following topics:

Preparing

- Students should select their group members and have a maximum of four people per group
- Group members introduce themselves to the other members within the group
- Create a Team Contract and have it approved by instructor
- The following should be included in the Team Contact:
 - Purpose and learning outcomes of the project
 - Responsibilities of individual group members
 - Deadlines for completion of individual tasks
 - Preferred online platform for group meetings
 - Meeting dates and times
 - Process for conflict management
 - Date and signature of group members and instructor

Implementing

- Maintain open communication amongst group members
- Constructively address individuals who are not completing their assigned tasks and bring it to the attention of instructor if not resolved

Assessing

- Have a brief session with group members to review successes and lessons learned about group process exercise