

**Investigating the Effects of an Intervention for Improving Vocational Students'  
Sense of Belonging and Soft Skills**

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## Abstract

There is an increasing shortage of ICT professionals in the Netherlands, while at the same time, there is also a discrepancy between what is taught during studies and what is expected in the labour market. Many Dutch vocational institutions turn their programmes into hybrid learning environments. Nowadays, in order to be professionally successful, soft skills are highly valued, however only little attention is being paid to teaching and training those skills in most study programmes (Abdullah-Al-Mamun, 2012). Especially in hybrid learning environments, less opportunities for soft skills development are available. Soft skills training enhances communication and social skills of students and therefore is not only a valuable skill for students' professional career. At the same time, soft skills training has positive effects on students' sense of belonging. Sense of belonging is correlated with psychological well-being, better learning outcomes, and lower rates of dropout which is a common phenomenon in Dutch vocational institutions. Fostering a sense of belonging is very important in ICT studies and hybrid learning environments because of the limited interactions that lead to isolation, and lack of community and connectedness (Demazière et al., 2006). This study investigated the effects of a soft skills intervention on communication and collaboration skills and sense of belonging. Software development students of a hybrid vocational study programme at a Dutch ROC (N = 22) participated in four interactive workshops that were focused on the development of teamwork skills through practice. Measurements focused on changes in participants' attitudes regarding their sense of belonging, peer relationships, and overt social behavior during the workshops. Results showed that the intervention had no significant effect, however, participants reported enjoying and benefiting from it. Although no significant results were found, there were still positive indications of the intervention regarding participants' attitudes toward their sense of

belonging and soft skills. Therefore, future implementation after refinement is expected to be more successful.

**Keywords:** *soft skills, sense of belonging, group dynamics, positive interactions, vocational education, attitude's change*

## **Investigating the Effects of an Intervention for Improving Vocational Students' Sense of Belonging and Soft Skills**

Vocational education is the type of education that aspires to develop work-related skills for producing ready-to-be-employed people (Hanushek et al., 2016). Its primary objective is to equip students with the technical expertise needed for the labour market (Abdullah-Al Mamun, 2012).

In the Netherlands, approximately 50% of students opt for vocational education tracks (Dutch Ministry of Education Culture and Science, 2013). The Dutch vocational education system is also known as MBO (Middelbaar Beroepsonderwijs). The MBO sector consists of MBO colleges with different specializations and qualifications. ROCs are one kind of VET colleges that offer study programmes in technology and other fields (Dutch Ministry of Education Culture and Science, 2013). Vocational programmes are usually designed in collaboration with the industry in which the students will be employed after graduation (Eegdeman et al., 2018). The MBO sector has the closest connection with the labour market compared to the other Dutch educational sectors (Dutch Ministry of Education Culture and Science, 2013). However, studies reveal a discrepancy between what is taught and what is expected of competent workers in a society that is becoming increasingly complex (Burchert et al., 2014).

In today's society, professional expertise is no longer enough to ensure employment. 21<sup>st</sup>-century job candidates need to acquire soft skills in order to succeed and excel (Qizi, 2020). Soft skills encompass non-technical qualities and characteristics and are connected to one's personality, attitude, and behavior (Abdullah-Al-Mamun, 2012). Some examples of soft skills are communication, collaboration/teamwork, conflict management, negotiation, stress management, and presentation. Unlike technical skills (hard skills) that may become obsolete over time, soft skills are applicable across various professional and personal contexts

(Matturro et al., 2019). Having good levels of soft skills is believed to be a crucial advantage for career advancement (Majid et al., 2012).

Although soft skills are considered very important and effective for employees and people in general, educational institutions have been giving limited attention to teaching or training these skills in educational institutions resulting in graduates entering the labour market without a sufficient level of soft skills. Employers report that many new graduates demonstrate self-centered behavior, present difficulties in working within teamwork settings, and expect rapid upgrowth without having the appropriate qualities (Abdullah-Al-Mamun, 2012).

Having well-developed soft skills allows people to communicate effectively and have successful social interactions (Rasipuram & Jayagopi, 2020). Moreover, high-quality soft skills are important for sustaining and maintaining interpersonal relationships, while at the same time being involved in interpersonal relationships improves' one's soft skills (Burlison, 1986).

ICT is one of the industries that looks for future employees from vocational institutions. Particularly in the Netherlands, the shortage of ICT professionals that has been a growing concern in recent years (de Ridder, 2019). Moreover, within the Dutch vocational education and training (VET) there is an increasing number of hybrid programmes, especially for studies within ICT (Burchert et al., 2014). Two of the main challenges of creating successful ICT hybrid programmes are the opportunities of interaction on the one hand and the creation of a positive learning climate on the other hand (So & Brush, 2008). The challenge of facilitating interaction is connected to the transactional distance, which is the psychological and communicational distance that occurs because of the enlarged time and space flexibility that hybrid education offers (Boelens et al., 2017). The challenge of fostering a positive learning climate is also connected to transactional distance, because transactional distance

threatens the learners with feelings of isolation and loneliness and increases the chances of dropout. Dutch vocational education is correlated with a high rate of dropout (Elffers et al., 2012).

Positive relationships as well as factors associated with them such as communication, opportunity, and participation contribute to the creation of a strong sense of belonging (Graham et al., 2016). Sense of belonging provides individuals with a sense of safety, connectedness, identity, purpose, and community that boosts one's self-esteem, confidence, and motivation (Ahn & Davis, 2020). In addition, sense of belonging has been proven to prevent students' dropout by fostering positive relationships with classmates and peers that provide social and emotional support (Elffers et al., 2012).

Since positive relationships in a classroom are so important for students' sense of belonging, learning and performance, it is important to study group dynamics within a classroom. One way to measure the interpersonal attraction between the members of a given group is sociometry (Balda et al., 2005), which is the study, first introduced by Moreno, that focuses on group dynamics and social interactions within a group or society (Fotopoulou et al., 2021). Sociometric techniques are considered highly reliable and valid, while at the same time being effective social outcome predictors. Moreover, they can be simply implemented with the right planning and assistance from qualified individuals (Fotopoulou et al., 2019). One fundamental and significant component of sociometric assessment is the use of peer nominations within a group (Cillessen & Marks, 2017). Peer nomination is still the most chosen method researchers use for sociometric analyses although there are other options such as peer ratings or paired comparisons (Cillessen & Marks, 2017). The peer nomination method requires the subjects to nominate three, in most cases, peers based on predetermined interpersonal qualities (Balda et al., 2005). Usually, both positive and negative criteria are used asking for both positive and negative nominations (Balda et al., 2005). The number of

positive nominations and reciprocal relationships one has affects their feeling of embeddedness, thus their sense of belonging (Harks & Hannover, 2019).

### **Soft Skills and Sense of Belonging in Software Developers**

Software development, like many other professional fields, requires a combination of hard skills and soft skills (Capretz & Ahmed, 2018). Nowadays, there is a high amount of diversity within software development specialties, which makes the need for acquiring soft skills even higher. Interpersonal and group soft skills are crucial for software developers because they have to be able to communicate effectively with users and other team members. Interpersonal soft skills are strongly connected to effective communication which leads to successful social interaction that is crucial for building and maintaining relationships both inside and outside the workplace (Magnus, 2009). Moreover, research shows that employees that have strong interpersonal soft skills have higher opportunities for promotions (DeKay, 2012). In addition, interpersonal skills are linked to increased engagement and job satisfactions due to positive connections with coworkers which lead to better performance and emotional well-being (Hynes, 2012). Regarding group soft skills, they are considered a critical human asset compared to machine tools or robotics. Teamwork is one of the few abilities that technology cannot imitate which is why organizations see it as the number one most valued competency of job candidates (E).

Thus, it is clear that the personal dimension of software development is equally crucial to technical expertise (Capretz & Ahmed, 2018). Even though soft skills are considered crucial factors in the development of software, they are frequently ignored by educators and practitioners. At the moment, there are hardly any soft skills courses specifically designed for computer science or software development curricula. This problem is also stressed by senior software professionals who highlighted that software developers are in need of a certain set of soft skills that includes communication and collaboration skills (Capretz & Ahmed, 2018).

Software development is in general a study that does not involve a lot of interaction or collaboration, especially in hybrid education settings (Matturro et al., 2019). It is mostly based on individual, self-paced work with limited interaction with peers and collaboration (Marques et al., 2018). This phenomenon often leads to the creation of ‘distant communities’ that have low or lack a sense of belonging (Demazière et al., 2006). Low sense of belonging has been found to relate to school or college dropout, decreased engagement, and academic difficulties (Elffers et al., 2012). In addition, low sense of belonging is correlated with emotional and behavioral problems, like depression and anxiety, delinquency, and substance use (Arslan & Allen, 2021). Group work and paired activities have been proven to be an effective strategy for developing and facilitating students’ sense of belonging while at the same time positively influencing their soft skills (Peacock et al., 2020).

### **This Study**

Since hybrid software development programmes provide limited opportunities for interaction and collaboration between peers leading to threatening students’ soft skills and sense of belonging (Boelens, et al., 2017), those were the main focuses of this study. This study aspires to investigate whether a soft skills’ intervention could improve the sense of belonging and communication and collaboration skills of vocational students’ of a Dutch ROC studying software development.

Sense of belonging is correlated with positive relationships between peers (Faircloth & Hamm, 2005). Therefore, the psychological climate of the classroom was investigated through the relationships of the classmates as an indicator of students’ sense of belonging. This study focused only on positive nominations with the aim to test whether the social dynamics of the groups changed after the intervention. An increase in the nominations either reciprocal or not would mean that participants’ sense of belonging increased likely due to the intervention.



There are some overt indications regarding the quality of one's soft skills and interpersonal interactions. One can gather information about how a person feels during an interaction by observing their voice, eye contact, body posture, and body language (Mehrabian, 1969). Therefore, participants' overt behavior during the workshops will be observed.

### **The Intervention**

This intervention was designed by the researcher during an internship at the vocational college ROC Flevoland in Almere, Netherlands within the software development (SD) study group. SD is a three-year hybrid programme by means that students work autonomously on online modules, but they do so in the classroom while having the teachers around to answer questions and further explain something if needed. This model provides students with much autonomy; they can work on their assignments at their own pace, in any order they prefer, and organize their time and schedule. Students are being assessed on their ability to communicate in a team, presentation skills, and reflection. However, although soft skills started being assessed, soft skills are not explicitly taught or trained in the programme.

The intervention consists of soft skills workshops containing interactive games and activities in small groups based on the idea that a sense of belonging will be indirectly influenced and improved by directly targeting students' soft skills and interactions. By increasing students' interactions and collaboration through soft skills training, it is expected that both their sense of belonging and soft skills will benefit. On the one hand, soft skills will be developed and trained which is important for employment and real life in general. On the other hand, the increased interactions and time students spent together are expected to increase their sense of belonging as well because it will allow students to get to know each other better, create positive relationships with their peers, and connect. The effects of the intervention will be measured by pre-and-post-tests consisting of sociometric peer

nominations, items from the Sense of Belonging Instrument (Hoffman et al., 2002), observations during the workshops focused on students' communication, and collaboration skills, and students' reflection on their soft skills and the workshops' effectiveness.

### **Research Questions and Hypotheses**

This study is based on the following research questions and hypotheses:

**RQ1:** To what extent do SD students' attitudes regarding their sense of belonging change from pre to post-test?

**H1:** There will be positive changes in students' attitudes regarding their sense of belonging from pre to post-test thanks to the increased interactions that might lead to new positive relationships and improve the psychological climate of the classroom.

**RQ2:** To what extent do mutual personal relationships among SD students change from pre to post-test?

**H2:** There will be more mutual connections between the students from pre to post-test suggesting increased positive relationships and nominations.

**RQ3:** To what extent do SD students' attitudes regarding their communication skills change after the intervention?

**H3:** Most students will be more confident regarding their communication skills after the intervention.

**RQ4:** To what extent do SD students' attitudes regarding their collaboration skills change after the intervention?

**H4:** Most students will be more confident regarding their collaboration skills after the intervention.

## Method

### Participants

Participants for this study were among software development students of ROC Flevoland in Almere through an online informed consent form that was created and distributed among the students via email (Appendix A). In order to facilitate the recruiting phase, a flyer was also created (Appendix B) and used to directly recruit participants using a QR code included in the flyer. Moreover, a prize of a 20€ Amazon voucher for one participant which would be randomly raffled off at the end of the study was added to motivate the students to participate.

A total of 30 students provided informed consent. However, during the first part of the study, seven students dropped out resulting in a sample of 23 participants. Moreover, some of the participants did not show up for all four workshops, which led to setting a requirement of at least two workshops for being included in this study. The final sample consisted of 22 participants ( $n=22$ ). Seventeen of the participants were in the first year of their studies (77,3%), three were in their second year (13,6%), and two were in the third year (9,1%). The age of the participants ranged from sixteen to 27 years ( $M= 18,41$ ,  $SD=2,906$ ). Regarding the gender, three participants identified as non-binary (13,6%), two as women (9,1%), and everyone else as men (77,3%).

### Materials

#### *Sense of Belonging Attitudes Survey*

A survey was created to provide information on the extent of participants feeling comfortable and accepted in class and on the social dynamics of the group. The survey was divided into two parts. The first part comprised ten statements related to students' feelings in class and opportunities for peer interaction. Participants were asked to indicate their level of agreement with each statement using a 4-point Likert scale (1= strongly disagree, 2=disagree, 3= agree, 4= strongly agree). The second part of the survey included a peer nomination

activity wherein participants were provided with a specific list containing all participants' names. They were asked to nominate three peers for various social contexts, including studying together, meeting outside of school, and enjoying conversations. The statements used for this activity were derived from the "Sense of Belonging Instrument" (Hoffman et al., 2002). Participants were requested to provide the names of their chosen peers for each context. The survey can be found in Appendix D.

### ***Intervention***

This intervention was designed during an internship at ROC van Flevoland in Almere. The intervention comprised of four soft skills workshops consisting of interactive activities and games that aimed to increase students' interactions and contribute to creating interpersonal relationships while at the same time training and developing communication and collaboration skills. Each workshop was expected to last about one hour. The main idea is to incorporate these workshops into the SD curriculum and provide more structure in the teamwork activities that was lacking. This way, students would not only have more opportunities to work in teams but would also have more chances for interactions with peers which were limited because of the hybrid nature of the study. The two first workshops included two interactive games which were meant to initially serve as icebreakers, allow students to get to know each other more, become energetic, and spend some time away from their computer screens. These games were also created for training and developing soft skills which is the additional target of this intervention. The final two workshops were more curriculum-related, including teamwork assignments with the aim to become part of the programme and provide the time and space for teams to meet and work on their assignments on a weekly-structured basis. Moreover, if teachers thought that students need it, they could also repeat the two first workshops sometimes per year, for instance once per month. A detailed description of the intervention can be found in Appendix C.

This intervention was designed to be implemented in small groups of five to six people with the aim to give everyone the time and space to interact with others and train their soft skills. The groups would be created according to the peer nomination task. The main idea was to put together people that were not close (no peer nominations between them) in order to create interpersonal relationships with more peers, improve students' sense of belonging by getting to know their classmates better and challenge them to train their communication and collaboration skills in different settings that would take them out of their comfort zone. As software development professionals, they will be required to work together with people they either do not know or they are not close with and therefore it is important to be trained in such conditions beforehand.

### ***Observation Schemes***

During the workshops direct structured observations of students' overt behavior were conducted by the researcher. Observation of overt behavior was chosen as an indicator of the quality of interactions and confidence in soft skills. The observation schemes included four variables: 1) change in voice, 2) eye contact, 3) body posture, and 4) use of body language. Each variable was divided into subcategories to capture a better understanding of participants' behavior. It should be noted that the observed behaviors are only applicable within this intervention's context and may not generalize to other contexts.

Since the participants' typical vocal attitude was unknown, it was decided to focus on the occurrence of changes in voice during the activity. This variable was divided into change in voice volume and changes in voice stability. Each participant would be observed when speaking during every activity of the workshops and the observer would note whether a change in the voice volume and voice stability occurred and if so whether participants' voice volume and voice stability increased or decreased. In case of no change that would mean that the workshops did not have any overt effect on participants' comfort and confidence during

interactions. Confidence and comfort when speaking is correlated with a loud and stable voice (Guyer et al., 2021), which is why an increase in the volume and stability of the voice would constitute a sign of an increase in comfort and confidence, whereas the opposite would mean decreased comfort and confidence.

The variable “eye contact” included the initial use of eye contact, change in use of eye contact, and in case of change occurrence the type of change was also indicated (increased or decreased). Maintaining steady eye contact suggests that someone is engaged and attentive which are both indicators of a successful interaction (Jongerius et al., 2020). Moreover, eye contact is related to emotional intelligence, empathy, and professionalism (Brown et al., 2020). During the workshops, each participant was asked to either present something to others or be involved in a conversation. One by one all participants were observed while talking. If a participant demonstrated eye contact during the whole process, that would be coded as yes in the variable eye contact and no in the variable change in eye contact. In case the participant started having eye contact after some time that would be coded as yes in variable eye contact and yes increased in variable change in eye contact. A change in eye contact would suggest increased or decreased engagement, as well as inhibition or confidence.

The variable “body posture” was used for the signals given by participants’ physical posture during the workshops. The focus here was on the type of body posture that participants demonstrated (introverted/extroverted) as well as on the occurrence of a change in the body posture. One’s body posture was characterized as introverted when the person demonstrated a reserved body posture (legs/hands crossed, hands in the pockets, limited or nervous movement) (Mehrabian, 1969). On the other hand, a participant would be coded as having an extroverted body posture if they demonstrate a relaxed and open posture (lean back, open legs, and arms, comfortable seat). Open/extroverted body posture is related to

affective communication, safety, and comfort, while on the other hand, closed/introverted body posture is associated with nervousness and discomfort (Mehrabian, 1969). A change in the body posture would imply either an increase in participants' comfort level or an increase in students' stress. Sense of belonging is correlated with a sense of safety and community (Ahn & Davis, 2020) which is why an introverted body posture of participants would indicate a strong sense of belonging, whereas an extroverted body posture would imply the opposite. Of course, some people are more introverted or extroverted than others by nature which is why a change in body posture would be monitored to reveal whether the intervention succeeded to increase students' comfort and safety levels through peer interactions and teamwork.

Regarding the variable "body language", the observations focused on whether participants used gestures during talking/presenting, and whether there was a change in that (increase/decrease). Active use of hand gestures fosters communication and positive interaction (Metallinou et al., 2011). Moreover, active use of hand gestures during an interaction shows engagement, involvement, and confidence (Balconi et al., 2020). Therefore, this observation included the initial use of body language, namely whether a participant initially used hand gestures or not, whether a change in the use of body language occurred, and finally in case of a change whether it was positive or negative (increased/decreased). In case someone already demonstrated active use of gestures in the beginning, that would indicate that the person had good soft skills, and it was confident, engaged, and involved in the discussion. In case of a positive change in the use of hand gestures, that would mean that the person became more engaged and involved, it started feeling more comfortable and confident. Finally, in case a negative change occurred, this would suggest that the person had decreased engagement and involvement, was bored, or not feeling safe and comfortable.

## ***Reflection***

A reflection section was added to the post-test survey to assess participants' beliefs on their soft skills quality and confidence before and after the intervention, as well as their experience during the workshops. The reflection section comprised 8 items. Similar to the first part of the survey, participants had to indicate their level of agreement using a 4-point Likert scale (1= strongly disagree, 2=disagree, 3= agree, 4= strongly agree). The reflection section of the survey can be found in Appendix E.

## **Procedure**

This study was executed after having received ethical approval from the University of Twente (request number 230582). The data was collected in April and May 2023. The study started with the online distribution of The Sense of Belonging Attitudes Survey via participants' student emails as a pre-test.

Based on the peer nomination activity, groups of six students were created including students that did not exchange nominations. The groups changed for each workshop and different combinations of participants were combined to give them the opportunity to meet each other and work together with different peers. Participants attended four workshops designed to train communication and collaboration skills. Each workshop lasted about one hour. The first two workshops included two activities each, while the third and fourth workshops focused on one bigger assignment each. Those two final workshops aimed to train students' collaboration, communication, and presentation skills in larger group settings. Therefore, two groups of 11 and 12 students were created. A more detailed description of the intervention's activities can be found in Appendix C. During the workshops participants' overt behavior was observed by the researcher. One by one all participants' change in voice volume and stability, eye contact, body posture, and body language while talking and



interacting were observed. All students were observed over a span of two days for the first two workshops and on the same day for the two final workshops.

In the end of the fourth and final workshop, the survey was again distributed to the participants as a post-test. This time, an extra section was added to the survey. The extra section constituted a reflection on participants' beliefs and feelings regarding their soft skills and their experience during the workshops.

### **Data Analysis**

First of all, participants' answers in the pre and post-test survey items were imported into SPSS version 28 for Windows. Before the data analysis, some of the items needed to be recoded in SPSS first, because they were worded in such a way as to reverse code the response set. For example, item 3 stated, "I know very few people in my class". People answering 1 (typically Strongly Disagree) are actually expressing that they know many people in their class which is the opposite of that statement. Thus, these kinds of items needed to be recoded so that participants' answers would not get confused or misinterpreted. The items that were recoded were items three, four, five, and ten.

Descriptive statistics and a paired samples T-Test were used to compare the pre-and-post-test data and evaluate whether there were differences. Moreover, the interventions' effect size was calculated using Cohen's D. Cronbach's alpha was calculated to assess the scale's reliability. Kaiser's rule of thumb for factor analysis was tested. Then an exploratory factor analysis was employed to test whether and which of the items cluster into a factor. Both Cronbach's alpha and exploratory factor analysis were conducted separately for the pre-and-post-test survey items to reveal the scale's internal consistency and dimensionality in repeated measures.

Participants' nominations were transcribed in the online tool Edrawmax (Empower your online diagramming, 2023) where sociograms were created. Different shapes and line colors

were used to create representations of the participants' gender, and the type of nomination. The process followed for the creation of the sociograms is explained in more detail in the peer nominations section of the results.

The observation data were coded and imported into SPSS. Three codes were created for each observation variable, namely '*no*', '*yes increased*', and '*yes decreased*'. Data were coded with '*no*' in case a certain behavior did not occur. The code '*yes increased*' was used when a behavior took place and demonstrated an increase during the workshop, whereas '*yes decreased*' was used when a behavior occurred but showed a decrease. A Chi-square test was conducted to calculate the frequency distribution. This analysis revealed the percentages of each behavior's occurrence during the workshops.

Finally, participants' answers in the reflection were also imported into SPSS. Negatively phrased items were recoded similarly to survey items. In this case, only item two needed to be recoded. A descriptive statistics analysis was conducted to reveal the mean and standard deviation in each item. The scale's Cronbach's alpha was calculated to test internal consistency. After checking eligibility for factor analysis according to Kaiser's rule of thumb, an exploratory factor analysis was employed to determine the scale's factors and the items loaded on each factor.

## **Results**

The results section is structured in the same order the materials were given to the participants and data were collected. Thus, first, the results of the survey items in the pre and post-test phases are presented, followed by the peer nominations' results. Then the observation data are displayed, and finally the reflection results are reported.

### **Sense of Belonging Attitudes Survey Items**

All the Sense of Belonging Attitudes Survey items can be found in Table 3. The results of descriptive statistics, paired samples T-test and Cohen's D analyses are presented in Table 4.

One-sided p-values calculated by the paired samples T-test were chosen to detect positive changes in participants' attitudes in the post-test phase (H1). The alpha level chosen was .05. The results indicated no significant difference ( $p \geq \alpha$ ) in all the scale items except for item nine ( $p=.015$ ). Item nine demonstrated the highest mean difference ( $MD=.500$ ) between the pre-and-post-test. This finding is also supported by the effect sizes conducted with Cohen's D. Item nine had the highest effect size compared to all other items ( $D=.494$ ), however, this is considered a non-significant effect size.

Participants' answers indicated the greatest variability in item four ( $SD=1.24$ ) for both the pre-and the post-test. Most participants' answers in item eight were clustered around the mean ( $M=3.00$ ) of the item in the pre-test ( $SD=.690$ ). Item seven had the same mean for both the pre and post-test ( $M=2.95$ ,  $MD=0$ ), but participants' answers were slightly more clustered around the mean in the post-test compared to the pre-test (Pretest  $SD >$  Posttest  $SD$ ).

**Table 3**

*Sense of Belonging Attitudes Survey Items*

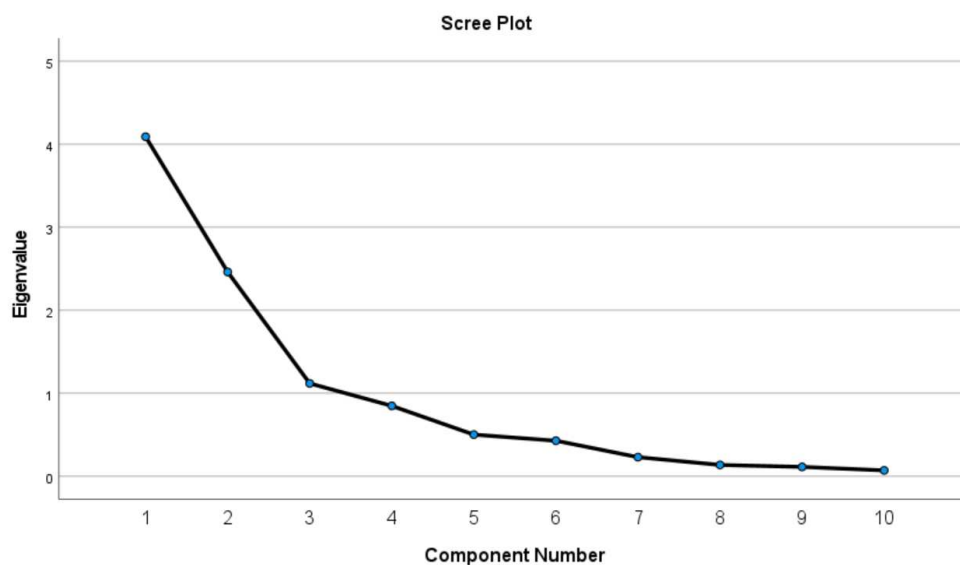
Item number	Item statement
Item 1	I feel comfortable asking a question in class.
Item 2	I feel comfortable contributing to class discussions.
Item 3	I know very few people in my class.
Item 4	I rarely talk to other students in my class.
Item 5	No one in my class knows anything personal about me.
Item 6	I have developed personal relationships with other students in class.
Item 7	I feel comfortable seeking help from a teacher before or after class.
Item 8	I feel comfortable asking a teacher for help if I do not understand course-related material.
Item 9	I invite people from class to do things socially.
Item 10	It is difficult to meet other students in class.

Cronbach's alpha of the pre-test survey items was calculated and accounted for .780, which is considered to be a good indicator of the internal consistency of the items in the scale (Gliem & Gliem, 2003). Cronbach's alpha of the post-test survey items comprised .757, which still indicates an acceptable internal consistency although slightly decreased compared to the pre-test scale. This decrease suggests a change in participants' attitudes regarding their sense of belonging after the intervention.

The pre-test scale's Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) value was .694, while the post-test KMO value accounted for .517. According to Kaiser (1974 ; as cited in Casper, 2017), values above 0.5 are considered acceptable. Moreover, Barlett's test for both the pre and the post-test survey items comprised  $p < 0.001$  which is believed to be highly significant (Field, 2005). Thus, factor analysis was appropriate in this case and therefore processed. Varimax rotation was used and only items with factor loadings of .4 or greater were interpreted. Exploratory factor analysis of the pre-test scale revealed the presence of three factors (eigenvalues greater than 1) as illustrated by the scree plot in Figure 1.

**Figure 1**

*Scree plot of pre-test scale*



**Table 4***Survey Pretest and Posttest Results*

Items	Pretest		Posttest		MD	SD	P	t	D
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>					
1	3.05	.950	3.18	.733	.136	.889	.240	.720	.153
2	2.64	.953	2.95	.844	.318	1.08	.092	1.37	.293
3	2.82	.958	2.54	.800	.364	1.21	.088	1.40	.299
4	2.95	1.09	2.64	1.09	.318	1.24	.123	1.19	.255
5	2.50	.964	2.45	1.01	.045	.844	.401	.253	.054
6	2.91	1.06	3.09	.868	.182	.853	.164	1.00	.213
7	2.95	.899	2.95	.722	.00	.617	.500	.00	0
8	3.00	.690	2.91	.971	.091	.526	.213	.810	.173
9	2.23	1.06	2.73	.935	.500	1.01	.015	2.31	.494
10	3.18	.853	3.09	.811	.091	.426	.164	1.00	.213

*Note.* M= Mean, SD= Standard Deviation, MD= Mean Difference, P= P-value, t= t-value, D= Cohen's D/effect size

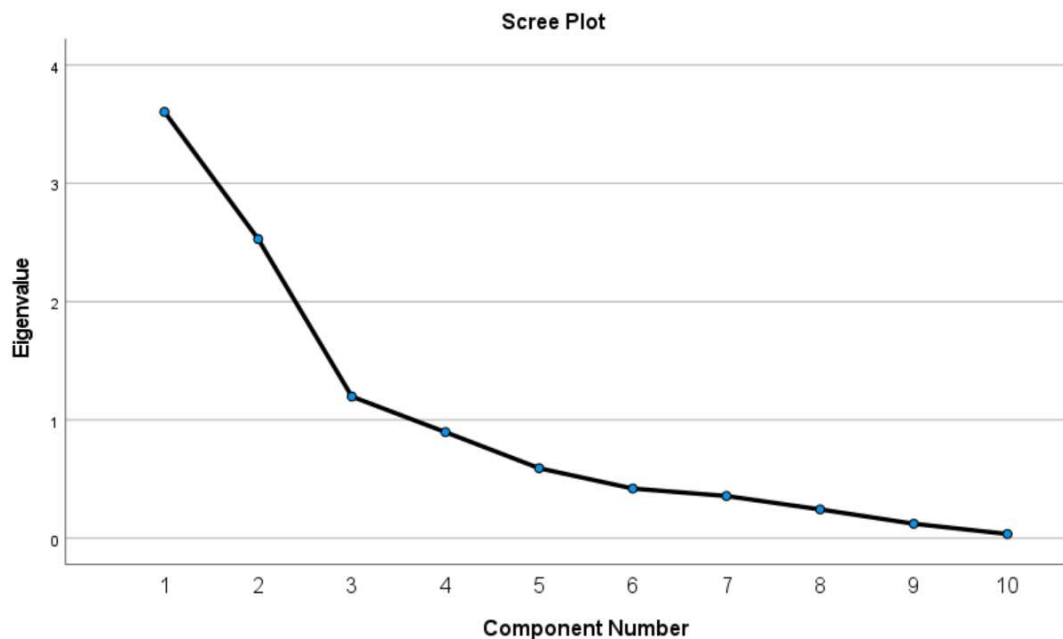
Table 5 presents the items that load onto each factor. Both factors one and two had four items clustered into them, while only two factors were loaded on factor three. Looking at the items clustered into every factor, the factors were labeled. All items that load highly on the first factor are related to feeling comfortable in talking and asking questions in class and therefore this factor might be labeled as '*comfort in class*'. Highly loaded items on the second factor refer to interacting with classmates which is why '*limited interactions in class*' could be the label of this factor. The two items that clustered into the third factor are related to being friends with classmates. Thus, this factor could be labeled as '*friendship with classmates*'.

**Table 5**

*Items of each factor in pre-test scale*

	Factor 1	Factor 2	Factor 3
I feel comfortable asking a question in class.	.917		
I feel comfortable contributing to class discussions.	.892		
I feel comfortable seeking help from a teacher before or after class	.882		
I feel comfortable asking a teacher for help if I do not understand course-related material.	.912		
I know very few people in my class.		.577	
I rarely talk to other students in my class.		.816	
No one in my class knows anything personal about me		.673	
It is difficult to meet other students in class.		.791	
I have developed personal relationships with other students in class.			.887
I invite people from class to do things socially.			.696

Three factors were found in the post-test scale as well which can be seen in the Scree plot demonstrated in Figure 2.

**Figure 2***Scree Plot of Post-Test Scale*

The items clustered into each factor are presented in Table 2. The survey items were loaded onto factors differently in the post-test phase. Six items were clustered into the first factor. Three items were loaded on the second factor, while one of them was loaded on both factors one and two. Two factors were clustered into factor three. Regarding the content of the items, items loaded on factor one are related to feeling accepted and having friends in the classroom. Therefore, this factor could be labeled as '*positive classroom climate*'. In case of factor two, the content of the items clustered into this factor is about being comfortable to ask things in class which is why it could be labeled as '*comfort to ask*'. Finally, the items loaded on the third factor refer to limited interactions in class leading to the label '*limited interactions in class*'.

**Table 2***Items of Each Factor in Post-Test Scale*

	Factor 1	Factor 2	Factor 3
I feel comfortable asking a question in class.	.633	.482	
I feel comfortable contributing to class discussions.	.810		
No one in my class knows anything personal about me.	.761		
I have developed personal relationships with other students in class.	.768		
I invite people from class to do things socially.	.859		
It is difficult to meet other students in class.	.578		
I feel comfortable seeking help from a teacher before or after class.		.914	
I feel comfortable asking a teacher for help if I do not understand course-related material.		.962	
I know very few people in my class.			.910
I rarely talk to other students in my class.			.766

**Peer Nominations**

The pre-test sociometric results are illustrated in the sociogram of Figure 3. In order to be able to read the two sociograms, it is important to note that different colors and lines were used to represent each type of peer nomination. Male participants were represented with a blue square, while females were illustrated with a pink circle, and non-binary participants were visualized with a yellow polygon. Lines were drawn to illustrate nominations, the arrow at the end of each line indicates the receiver of the nomination. In case of a mutual nomination, two arrows at the beginning and at the end of the line were used. For every type of nomination, a different color was used (friendship: blue, studying: red, free time: green, combination of friendships + studying: orange, combination of friendship + free time: purple, combination of studying + free time: yellow, and combination of all categories: black).



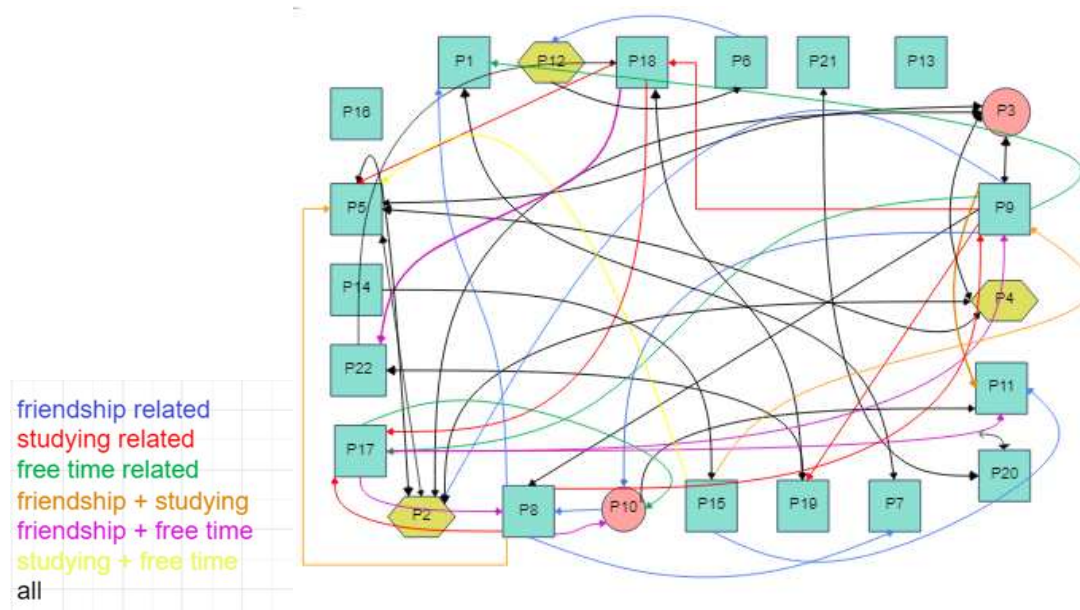
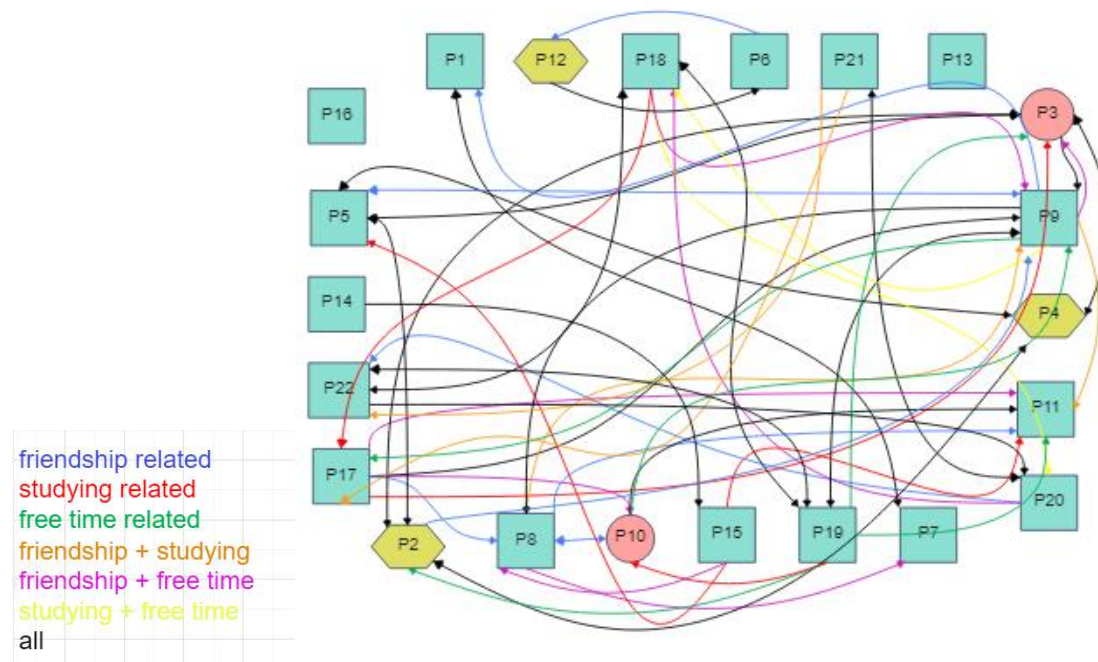
**Figure 3***Pre-Test Sociogram*

Figure 4 illustrates the sociogram of the post-test sociometric results. The post-test sociogram was created using the same method as with the pre-test sociogram. The number of every type of nomination in the pre-and-post-test is presented in Table 4. Mutual nominations in almost all categories increased in the pre-test compared to the post-test, however, the increase was not very large. Studying-related, friendship + studying and studying + free time categories indicated no mutual nominations either in the pre-test or in the post-test. Those three categories have studying in common. Studying-related nominations had a small decrease in non-mutual nominations in the post-test. In the categories, free time, friendship + studying, friendship + free time, studying + free time, and all non-mutual nominations slightly increased in the post-test. Friendship-related nominations demonstrated a decrease in non-mutual nominations in the post-test. However, the total number of this type of nominations remained the same in the pre-and-post-test. This finding combined with the increase in mutual nominations in this category suggests that two of the non-mutual friendship-related nominations of the pre-test became mutual in the post-test. In particular,

participant 10 gave a friendship-related nomination to participant 8 in the pre-test, while both shared a mutual friendship-related nomination in the post-test. The same happened with participants 5 and 9.

**Figure 4**

*Post-Test Sociogram*



**Table 4**

*Number of Pre-and-Post-Test Peer Nominations in Every Category*

		Pre-Test	Post-Test
<b>Friendship related</b>	Mutual	-	2
	Non-mutual	7	5
<b>Studying related</b>	Mutual	-	-
	Non-mutual	6	5
<b>Free-time related</b>	Mutual	-	1
	Non-mutual	3	4
<b>Friendship + studying</b>	Mutual	-	-
	Non-mutual	3	4
<b>Friendship + free time</b>	Mutual	-	1
	Non-mutual	5	6
<b>Studying + free time</b>	Mutual	-	-
	Non-mutual	1	2
<b>All</b>	Mutual	8	10
	Non-mutual	4	5

## Observations

It is important to note that the number of participants in every workshop differed. All participants took part in the second workshop (N=22), one participant did not show up in the first workshop (N=21), two people were missing in workshop 4 (N=20), and workshop 3 had the lowest participation rate out of all four workshops (N=19). In addition, the variable body language was not observed in the first workshop because the activities of this workshop did not provide sufficient opportunities for body language use.

The data gathered from the observations during the workshops were analyzed with a Chi-squared test to see the frequency distribution and then the percentage of each frequency distribution was calculated. Table 5 demonstrates the frequency of each observed behavior during the four workshops in percentages. The results indicated that most changes in voice (volume + stability) occurred in the first workshops and then gradually decreased. The opposite was observed for all other variables (eye contact, body posture, body position) where most changes occurred in the final workshops compared to the first ones. Use of eye contact peaked in the second workshop, while use of body position had a rise during the last workshop. Introverted body posture showed a gradual increase from workshop 1 to workshop 4, while extroverted body posture demonstrated a progressive decrease over time. However, in both cases, this gradual course was interrupted in workshop 3 where introverted body postures slightly increased and extroverted body postures had a small decrease. In workshop 4, the variables were back to their gradual course and introverted body posture reached minimum observation, whereas extroverted body posture had a maximal rise. During the second workshop, 9% of the participants decreased their voice volume while talking. No negative change was observed at any other point of the intervention.

**Table 5***Frequency Distribution of Observed Behaviors During Workshops*

			W 1	W 2	W 3	W 4
Change in voice volume		No	71.5%	72.8%	89.5%	90%
		Yes, increased	28.5%	18.2%	10.5%	10%
		Yes decreased	-	9%	-	-
Change in voice stability		No	76.2%	95.5%	100%	95%
		Yes, increased	23.8%	4.5%	-	5%
		Yes, decreased	-	-	-	-
Eye Contact	Use	No	80.9%	18.2%	42.1%	40%
		Yes	19.1%	81.8%	57.8%	60%
Body posture	Change	No	19%	36.4%	36.8%	30%
		Yes, increased	81%	63.6%	63.2%	70%
	Kind	Yes, decreased	-	-	-	-
		Introverted	76.2%	50%	52.6%	30%
Body language	Change	Extroverted	23.8%	50%	47.4%	70%
		No	28.6%	31.8%	52.6%	50%
	Use	Yes, becomes extroverted	71.4%	68.2%	47.4%	50%
		Yes, becomes introverted	-	-	-	-
Body language	Change	No	-	68.2%	57.9%	45%
		Yes, increased	-	31.8%	42.1%	55%
	Use	Yes, decreased	-	-	-	-
		No	-	54.5%	63.2%	45%
	Yes	-	45.5%	36.8%	55%	

**Participants' Reflection**

The final measurement of this study was participants' reflection. A descriptive statistics analysis was conducted to reveal how many of the participants found this intervention to have a positive effect on their soft skills and their confidence regarding their soft skills. Table 8 summarizes the results of the participants' reflection.

Item one demonstrated a mean of 2.82 and had the highest standard deviation ( $SD=.907$ ) meaning that participants had diverse opinions about that statement. Item five had the same mean as item one ( $mean=2.82$ ) and the second highest standard deviation ( $SD=.853$ ) indicating high variation in the answers. The third and fourth items had the lowest standard

deviations ( $SD=.560$ ,  $SD=.590$ , respectively) while demonstrating a mean of 2.86 and 3.41 respectively.

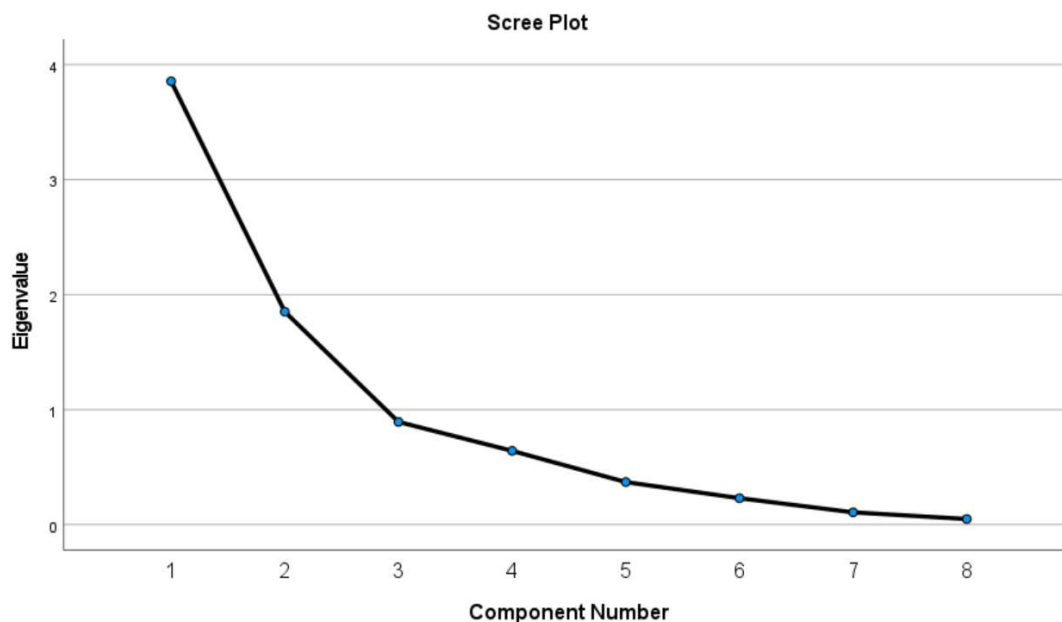
**Table 8**

*Descriptive Statistics of Participants' Reflection*

Items	<i>M</i>	<i>SD</i>
1: Before the workshops, my soft skills (communication, collaboration, presentation) were on a high level	2.82	.907
2: Before the workshops, I did not enjoy working in a group	3.09	.811
3: Before the workshops, I was confident regarding my soft skills (communication, collaboration, presentation)	2.86	.560
4: I enjoyed participating in the workshops	3.41	.590
5: I think the workshops were helpful for me	2.82	.853
6: After the workshops, my soft skills (communication, collaboration, presentation) improved	2.68	.780
7: After the workshops, I feel more confidence regarding my soft skills (communication, collaboration, presentation)	2.77	.752
8: After the workshops, I enjoy more working in a group	2.68	.716

**Figure 5**

*Scree Plot of Reflection Scale*



The scale's Cronbach's alpha was calculated and accounted for .742 which indicates acceptable internal consistency. Moreover, the scale's KMO value was .627 and Bartlett's

Test demonstrated  $p < 0.001$ . Both those values are considered acceptable according to Kaiser's rule of thumb (Field, 2005) and therefore allow for factor analysis. Exploratory factor analysis with varimax rotation was employed, only the items that demonstrated factor loadings of .4 or greater were interpreted. The factor analysis revealed two factors as can be seen in the scree plot in Figure 5 above.

The items that cluster into each factor are presented in Table 9. Five items are loaded on the first factor, while three items are clustered into the second factor. The content of the items loaded on factor one is about the experience in the workshops and the positive change in attitudes about soft skills after the workshops. Therefore, factor one could be labeled as '*positive intervention experience and positive attitude change regarding soft skills*'. The items clustered into the second factor refer to students' attitudes regarding their soft skills before the intervention. Thus, one label for this factor could be '*soft skills' attitudes before intervention*'.

**Table 9**

*Items of Each Factor in Reflection Scale*

	Factor 1	Factor 2
1: Before the workshops, my soft skills (communication, collaboration, presentation) were on a high level.		.893
2: Before the workshops, I did not enjoy working in a group.		.535
3: Before the workshops, I was confident regarding my soft skills (communication, collaboration, presentation).		.879
4: I enjoyed participating in the workshops.	.765	
5: I think the workshops were helpful for me.	.873	
6: After the workshops, my soft skills (communication, collaboration, presentation) improved.	.956	
7: After the workshops, I feel more confidence regarding my soft skills (communication, collaboration, presentation).	.891	
8: After the workshops, I enjoy more working in a group.	.879	

## Discussion

The present study investigated the effects of a soft skills intervention on participants' attitudes toward their sense of belonging, and communication and collaboration skills. It was expected that after the intervention, participants would have more positive attitudes regarding their sense of belonging, more mutual nominations with peers, and more confidence regarding their soft skills.

Regarding the first research question (RQ1: To what extent do SD students' attitudes regarding their sense of belonging change from pre to post-test? ), small changes were found in participants' attitudes toward their sense of belonging in the post-test in most items of the Sense of Belonging Attitudes Survey. Item 7 (I feel comfortable seeking help from a teacher before or after class.) did not change in the post-test, which can be explained by the fact that SD teachers were not involved in the workshops. The absence of teachers' or institutions' involvement confirms that limited attention is being paid to soft skills in the SD programme. No significant effects of the intervention were found for most items. Although it was hypothesized that this intervention would have a positive effect on students' attitudes toward their sense of belonging, many reasons can explain why this was not the case. On the one hand, the sample size determines the p-value (Pallant, 2013, as cited in Mansour, et al., 2015), hence this study's small sample size (n=22) would have minimal likelihood of identifying effect size. Moreover, the intervention was implemented for a very short period. Changing people's attitudes is not easy and takes time (Fishbein, 1995), which makes it reasonable that no significant effect was found in this case. On the other hand, three out of the four workshops did not have full attendance which together with the small sample size and the short-term implementation can explain this finding.

Although no significant effects of the intervention on participants' attitudes toward their sense of belonging were found, there were still positive indications of changes in attitudes. The ninth item, which was about meeting with peers outside of college, showed the biggest

change in the post-test as well as the biggest effect size compared to all other items. That was a surprising finding because it was not expected that a short-term intervention like this one could have a bigger impact on participants' relationships outside rather than inside their learning environment. However, an explanation could be that participants met new peers that enjoyed spending time together and they would like to meet outside of the college too. Participating in the workshops seemed to have created a bond between some students due to the shared time and experience which was illustrated by a change in many participants' attitudes in this statement.

Both the pre-and-post-test scale proved to be consistent and thus reliable measures of sense of belonging attitudes. The scale's items clustered differently into the factors from the pre-test to the post-test which again suggests some changes in students' attitudes. While in the pre-test, items were highly loaded on factors like comfort in class, limited interactions in class, and friendship with classmates, different correlations among items were found in the post-test. There, the items were clustered into factors labeled as positive classroom climate, comfort to ask, and limited interaction in class. Limited interaction in class was the only common factor between the pre-and-the post-test. However, while four items were highly loaded on this factor in the pre-test, only two items clustered into this factor in the post-test. This finding suggests that less participants reported having limited interactions in the post-test. Despite the small differences, the factors identified by both the pre-and-post-test confirm that this scale's items succeed in measuring people's attitudes toward their sense of belonging.

With regards to the second research question (RQ2: To what extent do mutual personal relationships among SD students change from pre to post-test?), the sociograms revealed a slight increase in most types of nominations, especially mutual nominations in the post-test. This finding confirms the hypothesis (H2) stating that more mutual nominations will occur in



the post-test. This increase indicates that this intervention contributed to the creation of positive interactions and relationships between students that did not know each other or interacted before. A high sense of belonging is correlated with having positive relationships with peers (Mansini, 2022). Therefore, the increase in peer nominations and especially in mutual nominations indicates an increase in some participants' sense of belonging. However, the change, in this case, was not significant. Some participants continued having no or few nominations after the intervention, which can be explained on the one hand by the short-term implementation of the intervention and on the other hand by the fact that some participants might not have much in common with the rest of the participants but with other peers that did not participate in this study.

Regarding the third (RQ3: To what extent do SD students' attitudes regarding their communication skills change after the intervention?) and fourth (RQ4: To what extent do SD students' attitudes regarding their collaboration skills change after the intervention?), the data obtained from the observations during the workshops and the reflection survey can be used to confirm whether the third and the fourth hypotheses were met.

The findings of the observation's data analyses revealed that participants' overt behavior during the workshops gradually showed signals of increased comfort and confidence regarding their communication and collaboration skills. While during the first workshop, many participants' showed signals of stress (e.g., no eye contact, many changes in voice), their overt behavior changed in the next workshops leading to most participants demonstrating signals of feeling relaxed and confident in the last workshop. Interestingly, some decreases in students' observed comfort and confidence were found in workshop 3 which interrupted the gradual course. This finding can be explained by the change in the group size. The first two workshops took place in smaller groups while the final two

workshops required students to work in bigger groups. Thus, a reason for this decrease in the third workshop could be the time some students needed to get used to the new condition.

Participants' answers in the reflection items revealed no big change in participants' attitudes toward soft skills. Thus, the third and the fourth hypotheses are not confirmed. Although no significant change was identified, this data also provided positive indications for this intervention's effectiveness in students' attitudes toward their soft skills. All students reported enjoying the workshops, and many students found the workshops helpful for them. Some students also agreed that their soft skills improved after the intervention, they became more confident about their soft skills, and enjoyed more working in a group. The reflection scale was also found to be a consistent and reliable measure for soft skill's attitude change. Finally, the factors identified align with the scale's objective and contribute to the scale's validity.

### **Limitations and Future Implementation**

It is important to note that this was the first implementation and evaluation of this intervention and therefore it is not surprising that no significant effect was found. This study had some limitations that explain the above discussed findings. This study's main limitations are the small sample size, the participants' selection method, and the short-term implementation. For this study, participants were recruited based on their availability and willingness to participate rather than their level and attitudes toward their sense of belonging and soft skills. Thus, some of the participants were not in urgent need of a soft skills intervention. Moreover, apart from the small sample size, there was also absence of full attendance in most workshops. On the one hand, no full attendance at the workshops explains the non-significant effect size while on the other hand, it stresses the importance of a soft skills intervention to increase students' responsibility and diligence. Another limitation of

this study was the absence of teachers' or faculty's involvement, which establishes the lack of interest in soft skills training in the SD curriculum.

Since this was the first exploration and evaluation of this intervention, future implementation is needed to explore the full potential of this intervention. Refinements based on this study's experience can benefit future implementation. Future implementations are expected to be more effective for students' attitudes change toward sense of belonging and communication and collaboration skills if applied for longer periods. Moreover, this intervention is believed to be more effective in people with low levels of sense of belonging and communication and collaboration skills, however, non-at-risk students can also benefit up to an extent. Implementing this intervention in bigger groups with more interchanges in the group dynamics is also expected to foster students' sense of belonging and soft skills because it will provide opportunities to meet and collaborate with more people.

Another important future implication is teachers' or institutions' involvement. Feeling accepted and respected by your teachers and your institution is related to someone's sense of belonging as well (Osterman, 2010). Therefore, teachers' and institutional staff's contribution to the intervention either by participating or by coordinating the workshops, is believed to have a positive effect on students' sense of belonging. Moreover, having teachers and other members of the institution involved in the implementation is going to stress even more the importance of training communication, and collaboration and their importance which might make students' effort more serious and consistent.

## **Conclusion**

There is generally a good level of agreement among all findings. All of them reveal that this soft skills intervention did not have a significant effect on participants' attitudes toward their sense of belonging, and communication and collaboration skills. However, positive indications were still found evident by the increase in participants' (mutual) peer

nominations, feelings of comfort, and confidence during the workshops, improvement in non-verbal communication and students' enjoyment of participation. Therefore, it is believed that this intervention could also be implemented in other groups to foster their sense of belonging and soft skills. The effects are expected to be enlarged if this intervention is applied in bigger samples for a longer period and with the contribution of teachers as well.

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## Appendices

### Appendix A – Informed consent form

[https://docs.google.com/forms/d/e/1FAIpQLSfblOMrHZ5jfl\\_NUUpWaFkugvN7xLn503NCP6Y5JDQLILMIA/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSfblOMrHZ5jfl_NUUpWaFkugvN7xLn503NCP6Y5JDQLILMIA/viewform?usp=sf_link)

# Informed Consent

Dear SD students,

You are invited to participate in a research study with the aim to improve interpersonal relationships and communication and collaboration skills for enhancing students' way of feeling in the classroom. During this study, you will be asked to fill in a peer nomination task, participate in four soft skills workshops that will last about one hour within your academic time within a period of about 2 weeks (you will be informed about the exact days). After the end of the workshops, you will be asked to fill in the peer nomination task again together with a survey. All the processes of this study will be in English. There will be a prize of an Amazon voucher (20€) that will be randomly raffled off.

You will have the right to withdraw from the research at any point you want without any consequences. In case you feel stress or discomfort at any point of this study, you are advised to contact Robin Timmer (r.timmer@rocvf.nl). If you are interested in receiving more information about this research, feel free to contact me:

[l.kalidaropoulou@student.utwente.nl](mailto:l.kalidaropoulou@student.utwente.nl)

After reading this information, please fill in your personal information below and sign this form if you are willing to participate in my research.

Your participation is highly valuable and it helps me a lot with my Master Thesis!

Thank you in advance,

Lida Kalidaropoulou

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\* Indicates required question

1. First Name \*

---

2. Last Name \*

---

3. Age \*

---

4. Gender \*

- Woman
- Man
- Transgender
- Non-binary

5. Year of study \*

*Mark only one oval.*

- 1st year
- 2nd year
- 3rd year

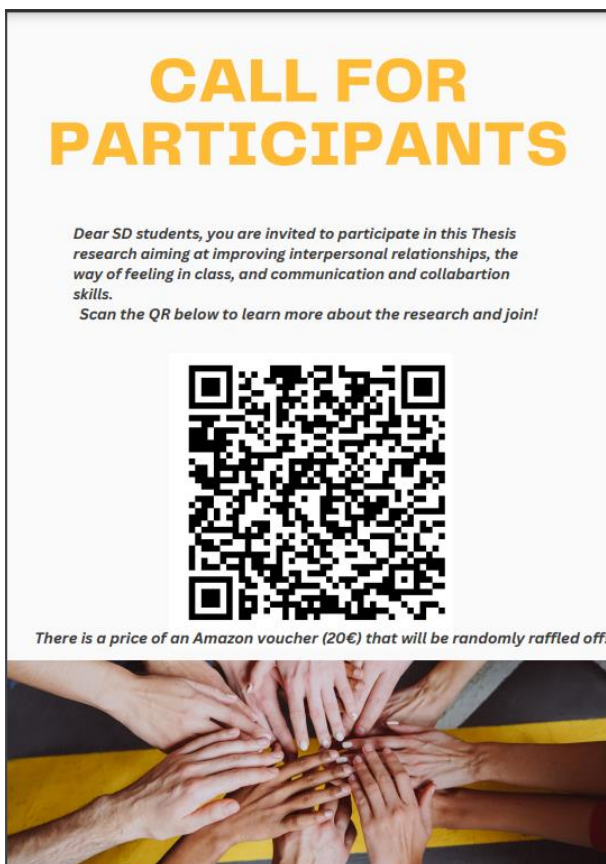
6. I consent to participate in the research \*

Check all that apply.

Yes

---


## Appendix B – Flyer for participants call




**CALL FOR PARTICIPANTS**

*Dear SD students, you are invited to participate in this Thesis research aiming at improving interpersonal relationships, the way of feeling in class, and communication and collaboration skills.*

*Scan the QR below to learn more about the research and join!*



*There is a price of an Amazon voucher (20€) that will be randomly raffled off!*



The flyer is a vertical rectangular card with a white background. At the top, the title 'CALL FOR PARTICIPANTS' is written in large, bold, orange capital letters. Below the title, there is a paragraph of italicized text in black. Underneath the text is a large black and white QR code. Below the QR code, there is another line of italicized text. At the bottom of the flyer, there is a photograph showing a group of diverse hands of various skin tones stacked on top of each other in a circle, symbolizing unity and teamwork. The background of the photo is a bright yellow.

## Appendix C – Intervention

### *Workshop 1*

#### Activity 1: Two truths, one lie

Two truths and one lie is a fun and easy activity to warm up the students and get them to know each other. Every student is asked to come up with 3 statements about themselves, two that are actually true and one that is a lie. The lie has to be something plausible in order to make it harder for others to detect it. The students sit in a circle and one by one tell their statements. The rest of the students have to vote on what they think is true and what is a lie. The teacher will be around and coordinate the activity, for instance, count the votes, determine whose turn it is to tell their statements, etc. Moreover, the teacher can also ask some students to substantiate their votes to make the activity more fun and interesting. In general, this is a nice and fun activity to train communication, break the ice between the students, and give everyone the opportunity to participate by doing something as simple as sharing any statements they want about themselves.

### Activity 2: Blind Drawing

For this game, group members are randomly divided into pairs. Every pair is seated back-to-back. One of them is given a picture, while the other one is given a pen and a piece of paper. The student with the picture has to instruct the other student in order to create a drawing that looks alike the picture. In order to help students better understand the importance of communication and to prevent the noise that would be created if all the pairs did the activity at the same time, one pair at a time will do the activity. The rest of the students will be asked to be salient and observe the process to indicate what went well and wrong in the other pairs' communication/collaboration. Through this activity, students are expected to train their communication and listening skills, as well as to identify common mistakes/problems of communication that they can avoid.

### *Workshop 2*

#### Activity 1: Debate-battles

For this activity, students need to create pairs. Then, one member of each pair will randomly take a card from a box that will indicate the topic of the debate. Then the teacher will randomly assign each member of the pair with one side of the debate, for example, the older member takes that and the older takes the other. Afterward, the students will be given 5 minutes to prepare their arguments for the debate and then the debate battles will take place in front of the whole group. By the end of each debate battle, the other students will be asked to vote for the winner who convinced them with their arguments. This activity is expected to develop and train students' communication, presentation/public speaking, and creative thinking skills, while at the same time being fun and enjoyable.

### Activity 2: Team Birthday Line Up

This is a very simple yet proven to be effective exercise for collaboration, communication, and problem-solving. The students are asked to create a line by standing one by one next to each other in chronological order; from the older (right) to the younger (left). Year, month, and day of one's birth, all have to be taken into account. However, all of this needs to happen in total silence, meaning that students need to find other ways than talking to achieve the goal of this activity. The students will be given 10 minutes to create a correct birthday lineup in order to also train time management skills.

### *Workshop 3*

This workshop will be the interface between the first two more general workshops. For this workshop, students will be asked to work on a specific assignment; the reformation of their classroom.

This activity will start with brainstorming regarding what students think needs to be changed in the classrooms, what they would like to add, how they think it is best to do it, etc. The purpose of this step is dual; on the one hand, it will provide the guidelines for the



classrooms' reformation in order to make them more likable and friendly for the students, but on the other hand, it also provides a great opportunity for observing and training students' communication skills. Then the students will be divided in small groups (4-5 people) and each group will take on a different task according to the outcomes of the brainstorming. The groups will be created randomly by using any random group formulation method.

After the groups' formation, it is time for the actual activity execution. During this step, each group will work on their project. This assignment will last from 2 to 4 weeks (one session per week) depending on the brainstorming and the tasks that the groups will work on. In the middle of the assignment, the teams will be randomly paired, and they will be asked to give feedback to each other. In the final step of this phase, groups are asked to present their work to the other teams. The purpose of it is primarily to observe and train students' presentation skills.

#### *Workshop 4*

After teaching and training their soft skills in general, it is important to embed in the existing programme a teamwork routine that is connected to the content of the programme. An example first activity for that purpose could be the improvement of the hybrid learning environment of the SD programme.

Like workshops 3 assignment, this assignment will also be devoted to suggesting and applying changes to the online environment this time with the aim to make it more likeable and enjoyable to work with for the students. The structure of this assignment is the same with the one of workshop 3, it starts with brainstorming, then groups are randomly formulated, and each group works on a task. The duration of this assignment depends on the brainstorming outcomes and can be decided together with the students. Peer feedback will take place in the

middle of the assignment. Again, in the end of the project, every team has to present their work to others.

### Appendix D- Pre-and-post-test Survey

## Questionnaire

Please reply to the statements below by indicating the amount of your agreement (1=strongly disagree, 2=disagree, 3=agree, and 4=strongly agree).

\* Indicates required question

---

1. 1. I feel comfortable asking a question in class. \*

*Mark only one oval.*

\_\_\_\_\_

**Strongly Disagree**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Strongly Agree**

\_\_\_\_\_

2. 2. I feel comfortable contributing to class discussions. \*

*Mark only one oval.*

\_\_\_\_\_

Strongly Disagree

---

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---

---

Strongly Agree

3. 3. I know very few people in my class. \*

*Mark only one oval.*

---

Strongly Disagree

---

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---

Strongly Agree

4. 4. I rarely talk to other students in my class. \*

*Mark only one oval.*

---

Strongly Disagree

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---

---

---

Strongly Agree

---

5. 5. No one in my class knows anything personal about me. \*

*Mark only one oval.*

---

Strongly Disagree

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---

Strongly Agree

---

6. 6. I have developed personal relationships with other students in class. \*

*Mark only one oval.*

---

Strongly Disagree

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---

Strongly Agree

7. 7. I feel comfortable seeking help from a teacher before or after class. \*

*Mark only one oval.*

---

Strongly Disagree

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---

---

Strongly Agree

8. 8. I feel comfortable asking a teacher for help if I do not understand course- \* related material.

*Mark only one oval.*

---

**Strongly Disagree**

---

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---

---

**Strongly Agree**

---

9. 9. I invite people from class to do things socially. \*

*Mark only one oval.*

---

**Strongly Disagree**

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---

**Strongly Agree**

---

10. 10. It is difficult to meet other students in class. \*

Mark only one oval.

---

Strongly Disagree

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---

Strongly Agree

---

### Peer Nominations

Please provide **three peer nominations** for each of the following statements: names of your classmates (first and last name) out of the list below.

#### List for peer nomination

11. 1. I am friends with.. \*

---

12. 2. I would like to be in the same group for a groupwork with.. \*

---

---

13. 3. If I do not understand something in class, I would ask.. \*

14. 4. During the breaks, I hang out with... \*

---

15. 5. I discuss personal matters with.. \*

---

16. 6. If I wanted to ask something course-related, I would contact... \*

---

17. 7. I meet outside the college with... \*

---

18. 8. I enjoy discussing with... \*

---

19. 9. I have a lot in common with... \*

---

20. 10. I study together with... \*

---

---



21. Your First Name: \*

---

22. Your Last Name: \*

### Appendix E – Survey's reflection section

#### Reflection

Please reply to the statements below by indicating the amount of your agreement (1=strongly disagree, 2=disagree, 3=agree, and 4=strongly agree).

23. 1. Before the workshops, my soft skills (communication, collaboration, presentation) were on a high level. \*

*Mark only one oval.*

---

Strongly Disagree

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---

---

---

---

Strongly Agree

---

24. 2. Before the workshops, I did not enjoy working in a group. \*

*Mark only one oval.*

---

Strongly Disagree

---

---

---

---

---

Strongly Agree

---

25. 3. Before the workshops, I was confident regarding my soft skills \*  
(communication, collaboration, presentation)

*Mark only one oval.*

---

Strongly Disagree

---

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---

---

Strongly Agree

---

26. 4. I enjoyed participating in the workshops. \*

*Mark only one oval.*

---

Strongly Disagree

---

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---

---

Strongly Agree

---

27. 5. I think the workshops were helpful for me. \*

*Mark only one oval.*

---

Strongly Disagree

---

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---

Strongly Agree

28. 6. After the workshops, my soft skills communication, collaboration, \*  
(presentation) improved.

*Mark only one oval.*

---

Strongly Disagree

---

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---

Strongly Agree

29. 7. After the workshops, I feel more confidence regarding my soft skills \*  
(communication, collaboration, presentation)

Mark only one oval.

---

Strongly Disagree

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---

Strongly Agree

---

30. 8. After the workshops, I enjoy more working in a group. \*

Mark only one oval.

---

Strongly Disagree

---

---

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---

---

Strongly Agree

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