MASTER THESIS
Faculty of Behavioural, Management and Social Sciences (BMS)

A PROFESSIONAL IDENTITY INTERVENTION TO TAKE ADVANTAGE FROM THE DIVERSITY WITHIN TECHNICAL STUDENT PROJECT TEAMS.

MARGOT VAN REES
M.Sc. Educational Science and Technology

EXAMINATION COMMITTEE
First supervisor
Dr. L. Aarntzen

Second supervisor
Dr. R. van Veelen

27 august 2020

Abstract

Work in the technical sector is increasingly organized in interdisciplinary teams due to globalized markets and technological changes. Since the organization of work in diverse teams remains challenging, it is important that young professionals learn to work together in an early stage. Therefore, this study created an intervention that aimed to take better advantage of the diversity of international and interdisciplinary student project teams. The intervention identified the professional identities (PI) of the team members and allowed them to reflect together on the PIs in the team. Ultimately, the intervention was expected to increase *team learning, team inclusion* and *team membership self-esteem*. In a quasi-experimental study among 605 students (141 teams), data were collected from two online questionnaires to obtain evidence of *team learning, team inclusion* and *team membership self-esteem*. A repeated measures ANCOVA showed that the PI intervention had no effect on *team inclusion* and *team membership self-esteem*. An ANCOVA revealed that the intervention negatively effected *team learning*, indicating that, the non-intervention group scored higher on *team learning* than the intervention group. Further analyses revealed that the intervention had a positive effect on *team inclusion* for gender diverse teams. Overall, this study concludes that the intervention has no impact in international and interdisciplinary student project teams. In gender diverse teams, the intervention led to increases in *team inclusion*. Further research should give more attention to discussing team members' PIs to increase information elaboration and presumably profit from the diversity of international and interdisciplinary student teams.

Keywords: professional identity, team learning, team inclusion, team membership self-esteem, intervention.

Acknowledgements

Het einde is daar! Op dit moment ben je begonnen met het lezen van mijn master thesis: ‘a professional identity intervention to take advantage from the diversity within student project teams’ ter afronding aan de master Educational Science and Technology. Het was af en toe een hele klus om mijn thesis af te schrijven, maar het is gelukt! Alleen niet zonder de hulp mensen in mijn omgeving. Klink cliché, maar toch echt waar!

Allereerst mijn begeleiders, Lianne Aarntzen en Ruth van Veelen, bedankt voor jullie kritische, maar ook positieve en inspirerende feedback. Heel erg fijn hoe jullie mij door de laatste paar (corona-)maanden hebben gesleept. Dankzij de online feedbackmomenten en mailtjes heb ik mijn thesis naar een niveau kunnen brengen waarvan ik zelf nooit had dacht dat het zou lukken. Ook wil ik Maaike Endedijk en Marlon Nieuwenhuis bedanken. De gezellige gesprekken, feedback, en adviezen (onder het genot van een heerlijke cappuccino) zette me altijd weer tot denken. En daarbij, zonder jullie had de data collectie nooit plaats gevonden! Op een vrijdagavond zijn we samen menig Jumbo en Lidl afgegaan voor het vinden van 100 roomboter cakes (gelukkig bleven er daarna nog een paar over voor eigen gebruik). Ook wil ik Birgit Maas bedanken. Samen met jou ben ik mijn thesis gestart en hebben we de interventie ontwikkeld. Zonder jou had er nooit een professionele identiteit test gelegen! Bedankt voor je inzichten en kennis; we vulden elkaar perfect aan!

Lieve Ira, bedankt voor de vele momentjes in de bibliotheek. Hoe fijn was het om, tijdens deze warme zomer, samen te kunnen sparren over dingen waar we tegen aanliepen: bedankt!

Lieve familie en vrienden en in het bijzonder Tessa, bedankt voor jullie motivatie, interesse en bemoedigende woorden. Bedankt dat ik tijdens het avondeten, en alle andere (koffie) momenten, stoom kon afblazen over alles waar ik mee zat en geen uitweg in kon vinden. Heel erg fijn hoe dat me altijd weer gerust stelde!

Lieve mama, helaas mag je dit moment niet meer meemaken. Je was, en bent, nog steeds een groot voorbeeld. Je hebt me meegegeven dat ik vertrouwen in mezelf kon hebben en me daarmee gemotiveerd om door te zetten. Zonder jou had ik hier daarom nooit gezeten. Ik hoop dat je vanaf een fijn plekje meekijkt en trots bent, want zoals je zelf zei: ‘Overal waar jij bent zal ik bij je zijn.’

Table of Contents

1. Introduction

Nowadays, work in the technical sector is increasingly organized in interdisciplinary teams due to globalized markets, more competition and technological changes. The organization of work in diverse teams may be beneficial, because diversity has the potential to increase the availability of different perspectives, networks, knowledge and skills that members can use to solve complex problems (Ely & Thomas, 2001). However, diversity can also have a negative impact on the well being of team members, for example because it can increase stereotyping, miscommunication, and conflict between team members (Van Dijk, Meyer, Van Engen, & Loyd, 2017). Thus, profiting from diversity remains challenging. Hence, it is important that young professionals learn to work together at an early stage in their career. In this study, we aim to create an intervention where diversity can improve the functioning of international and interdisciplinary student project teams. The intervention makes everyone's professional identity transparent and explicit so that team members can benefit from each other's knowledge and perspectives. This way, this intervention attempts to increase team learning, the level of inclusion and membership self-esteem in students project teams in higher vocational education.

To make optimal use of the diversity within international and interdisciplinary teams, team members' professional identities are believed to be important (Academy of Medical Royal Colleges, 2020). A professional identity (PI) can be described as a concept of how people see themselves as a professional, and the competencies, personalities, values and interests people possess (Fitzgerald, 2020; Möwes, 2016). Subsequently, teams that include team members with different PIs are also expected to be diverse in terms of knowledge, skills and perspectives.

Research shows that diverse teams can benefit from different backgrounds and expertise through elaboration of task-relevant information and perspectives (e.g., Homan et al., 2008; Kooij-de Bode, Van Knippenberg, & Van Ginkel, 2008; Van Ginkel & Van Knippenberg, 2008; Van Knippenberg, De Dreu, & Homan, 2004). Information elaboration can be defined as the exchange, discussion, and integration of task-relevant information and perspectives (e.g., Van Knippenberg et al., 2004; Van Knippenberg, Van Ginkel, & Homan, 2013). When team members see that they are different from each other, they are triggered to participate in information elaboration (i.e., exchange, discuss and integrate relevant knowledge and expertise; Hofhuis et al., 2018; Van Knippenberg et al., 2004). Therefore, this study develops an intervention that identifies team members' PI to activate information

elaboration in international and interdisciplinary student teams. That way, team members can benefit from each other's differences through the process of information elaboration.

Past research on information elaboration mainly focused on circumstances under which this process led to performance (e.g., Van Knippenberg et al., 2004). However, to the best of knowledge, no research has yet investigated the activation of information elaboration through the identification of team members' PIs. Therefore, this study contributes to research by establishing a link between information elaboration and PI.

To sum, the current study develops an intervention in which PIs are revealed to activate information elaboration. The intervention allows students to receive insight into their own PI and jointly reflect on the PIs in the team. Accordingly, teams optimally profit from the diversity as students become motivated to use differences in knowledge and expertise during team tasks.

2. Theoretical framework

2.1 A professional identity perspective to profit from diversity

The current study aims to benefit from the diversity of international and interdisciplinary student project teams by recognition of student's professional identity (PI). A PI can be broadly defined as an answer to the question "Who am I as a professional?" (Beijaard, Meijer, & Verloop, 2004). A PI consists of two dimensions, namely identity content (e.g., personality, competencies, interests and values) and identity strength (i.e., degree to which someone matches those factors; Becker & Wagner, 2009). For example, the identity content of a technical student may be 'designing', 'solving problems' or 'analyzing' and identity strength describes the degree to which students perceive themselves as a technical professional.

The intervention in this study measures identity content. Identity content may contain the ability to perform the profession, the knowledge that is needed to perform the profession and the values and ethics of the profession (Fitzgerald, 2020). In line with that, Asforth, Harrison, and Corley (2008) indicate values, goals, beliefs, personality traits, knowledge, skills and abilities as important factors of identity content. Recently, an instrument was developed that quantitatively measures students' PI content (e.g., Career Compas; Möwes, 2016). This instrument is comprised of five profiles (i.e., all-rounder, analyst, team-player, innovator and individualist) that describe PI content. For example, analysts are confident of

their analytical skills and are mostly independent and structured in their work. In addition, all-rounders are outgoing, like to manage teams and collaborate with others. Concluding, teams, that contain team members with different PI, are diverse in terms of knowledge and expertise.

In this study, a Career Compass adapted test is used to measure identity content. In the intervention, students' PI is identified and students jointly reflect on each other's PIs. As a result, students become aware of the differences within the team and are motivated and triggered to share and exchange their unique knowledge and expertise (Hofhuis et al., 2018; Van Knippenberg et al., 2004). The latter is also known as information elaboration, since information elaboration involves sharing and integrating task-relevant information and perspectives (e.g., Van Knippenberg et al., 2004; Van Knippenberg et al., 2013). In this way, the intervention in the current study activates information elaboration in teams through the identification of students' PI.

2.2 The effects of diversity in teams

Despite the fact that teams have the opportunity to benefit from diversity through information elaboration, this process does not always take place. This may be due to social categorization perspective. Social categorization holds that similarities and differences in teams are used to categorize the self and others into subgroups, which activates intergroup bias (Tajfel & Turner, 2004; Van Knippenberg et al., 2004). Team members favor 'ingroup' members who are similar to them over 'outgroup' members who are different and are more willing to collaborate with 'ingroup' members (Van Knippenberg & Schippers, 2007). Research shows that team members who tend to categorize their team members into subgroups (e.g., as women, hooligans, technician) also tend to stereotype others on the basis of those subgroups (Van Knippenberg & Dijksterhuis, 2000). A stereotype is defined as a mental representation of what members in a group are like (Van Knippenberg & Dijksterhuis, 2000). For example, where women are usually seen as soft, caring and warm, men are seen as ambitious, independent and assertive. Men would therefore be more suitable for managerial or technical positions and women for taking care of children or nursing. So, people who are stereotyped are more likely to be approached and treated differently (Van Knippenberg & Dijksterhuis, 2000).

Together with the information-elaboration perspective, the social categorization perspective can be compiled into the categorization-elaboration model (CEM; Van Knippenberg et al., 2004). The CEM states that most diverse teams have a higher performance than non-diverse teams through information elaboration, but only when social

categorization is not activated (i.e., stereotyping, intergroup bias; Tajfel & Turner, 2004; Van Knippenberg et al., 2004).

Recently, empirical evidence into the CEM indicates that strong team identity can be an underlying factor in determining when positive effects of diversity occur (Van Veelen & Ufkes, 2019). Having a strong team identity reduces social categorization, because team members that are committed to the team are less likely to fall into social categorization processes (e.g., miscommunication, intergroup bias; Van Veelen & Ufkes, 2019). Research indicates that a strong team identity can be built on unique contributions of team members (Jans, Postmes & Van der Zee, 2012). Team members who are able to express their individuality are more inclined to contribute to the team and at the same time form a team identity (Jans et al., 2012). Consequently, through the unique contributions of team members, a team identity is formed and social categorization is not activated. The intervention in this study builds upon that, by making team members aware of their own unique contributions and thus stimulate the positive attributes of diversity.

Consequently, this current study focuses on the PIs of team members to reveal their unique contributions. Through this focus, it is expected that the positive effects of diversity are more likely to occur and social categorization is not activated. In what follows, activating information elaboration and decreasing social categorization in the PI intervention are discussed.

2.3 The professional identity intervention in this study

This study develops an intervention that aims to profit from the diversity within international and interdisciplinary student project teams. In order for the intervention to truly benefit from diversity, the intervention needs to activate information elaboration and decrease social categorization. In what follows, we will further discuss how the professional identity (PI) intervention can facilitate these elements.

First, the intervention needs to activate information elaboration among team members. As previously mentioned, research shows that diverse teams can take advantage of varieties in background and expertise through the process of information elaboration (e.g., Homan et al., 2008; Kooij-de Bode et al., 2008; Van Ginkel & Van Knippenberg, 2008; Van Knippenberg et al., 2004). The intervention is likely to stimulate information elaboration in teams by uncovering PIs. During the first part of the intervention, students gain insight in their own PI by means of a Career Compass adapted test. Following, team members jointly reflect on each other's PI. The latter is likely to trigger information elaboration, since team members are

provoked to exchange and integrate task-relevant knowledge and expertise (Hofhuis et al., 2018; Van Knippenberg et al., 2004). At the same time, information elaboration enables team members to identify others with specific areas of expertise and knowledge and build a transactive memory system (Lewis, Lange, & Gillis, 2005). Research demonstrated that when teams build a transactive memory system, information is processed more efficiently and accurately and teams learn more effectively (Lewis, 2003; Lewis et al., 2005; Moreland & Myaskovsky, 2000). This study builds on this, by assuming that the intervention activates information elaboration and contributes to team learning.

Second, the intervention aims to reduce social categorization. As mentioned before, research explains that social categorization represents the negative aspects of diversity (i.e., similarities and differences in teams are used to categorize self and others into subgroups; Tajfel & Turner, 2004; Van Knippenberg et al., 2004). This intervention is expected to reduce social categorization by forming a team identity through the exposure of students' unique contributions (Jans et al., 2012; Van Veelen & Ufkes, 2019). This follows research of Jans et al. (2012), who state that unique contributions of team members can form a team identity. During the intervention, team members are encouraged to discuss and reflect on the individualities of themselves and team members. By discussing unique contributions (i.e., PIs) team members are likely to build a team identity (Jans et al., 2012). As a result, the intervention will not activate social categorization processes (e.g., intergroup bias) and, instead, international and interdisciplinary teams can profit from their diversity.

Concluding, the intervention is designed in such way that it is expected to activate information elaboration and reduce social categorization in international and interdisciplinary teams. Furthermore, since team members in diverse teams contain both cognitive and affective processes, this intervention is expected to have an effect on team learning (i.e., cognitive process), team inclusion and team membership self-esteem (i.e., affective processes) in student project teams. Following, these concepts are described.

2.4 The influence of the professional identity intervention on team learning

In relation to the information-elaboration perspective, it is expected that the professional identity (PI) intervention increases team learning. Team learning can be defined as a process of sharing, applying and integrating knowledge, and reflecting on these experiences (e.g., Edmondson, 1999). The greater the amount of knowledge, skills and abilities in teams, the more individual and collective learning is stimulated (Hofhuis et al., 2018; Van der Vegt & Bunderson, 2005; Van Knippenberg et al., 2004; Van Knippenberg &

Schippers, 2007). Therefore, the current study expects that the PI intervention, in which diverse student project teams discover each other's expertise and unique characteristics, stimulates team learning.

Team learning can be improved by the presence of a transactive memory system. A transactive memory system can be defined as a process of elaboration among team members to encode, store and retrieve information relevant to the team's task (Lewis et al., 2005; Wegner, 1986; Wegner, Giuliano, & Hertel, 1985). In that sense, elements that constitute a transactive memory system highly overlap with many dimensions of team learning.

Research already confirmed that transactive memory systems increase team learning (Lewis et al., 2005). Transactive memory systems exist when team members associate others with specific areas of expertise, team members specialize in their own area of expertise and the team's knowledge is differentiated (Lewis et al., 2005). It also has a positive effect on the functioning of the team, as teams perform their tasks more accurately and process information more effectively (Franz, 2012; Lewis, 2003; Lewis et al., 2005; Moreland & Myaskovsky, 2000). Moreover, recent research already established a link between PI and transactive memory systems, while highlighting the importance of team members needing to know their own unique characteristics and expertise, and the unique expertise and skills of others, in order for them to work together effectively (Academy of Medical Royal Colleges, 2020). Accordingly, it can be expected that when team members receive information on each other's PI, team members build a transactive memory system and thereby, increase their level of team learning.

Concluding, as research shows consistent findings for the elements of the PI intervention, the current study attempts to establish a link between the identification of students' PI and higher levels of team learning by developing a transactive memory system in student project teams. During the intervention, team members receive information about their own PI, reflect jointly on the PIs in the team and gain knowledge on how team members' expertise can be used during the team task. Based on this, the following hypothesis is formulated:

> Hypothesis 1: *The professional identity intervention facilitates team learning more in student project teams in the intervention group than in students project teams in the non-intervention group.*

2.5 The influence of the professional identity intervention on team inclusion

In addition to cognitive processes within teams (i.e., learning), it is also expected that the professional identity (PI) intervention has an effect on the affective processes (i.e., feelings of inclusion and membership self-esteem) within teams. Team inclusion is described as the degree to which team members receive a sense belonging and feel included in a team (i.e., belongingness) and at the same time feel encouraged to maintain uniqueness within the team (i.e., uniqueness; Chung et al., 2020; Ely & Thomas, 2001; Jansen, Otten, Van der Zee, & Jans, 2014; Shore et al., 2011). Subsequently, research suggests that feeling more belongingness and uniqueness leads to a better understanding of the effects of inclusion (Chung et al., 2020; Jansen et al., 2014; Shore et al., 2011).

Creating both constructs simultaneously means that differences among team members should be identified (i.e., uniqueness) and team members should have an open climate where they feel that they can openly discuss different viewpoints (i.e., belongingness; Ely & Thomas, 2001; Hornsey & Jetten, 2004; Jans et al., 2014). Revealing team members' individuality contributes to the level of uniqueness in the team, but it can also create a team identity, which limits the activation of social categorization and produces a sense of belongingness (Bettencourt, Molix, Talley, & Sheldon, 2006; Chung et al., 2020; Jans et al., 2012, Van Veelen & Ufkes). Moreover, team members who are able to express their uniqueness are more inclined to contribute to the team (Jans et al., 2012). Thus, identifying and discussing students' PI satisfies both uniqueness and belongingness.

Hence, the intervention in the current study identifies students' PI to increases team inclusion. Identifying team members' PI ensures feelings of uniqueness among team members and also creates a team identity, which makes team members feel a sense of belonging to the team. As a result, the following hypothesis is formulated:

> Hypothesis 2: *The professional identity intervention leads to higher feelings of inclusion among students in the intervention group than among students in the non-intervention group.*

2.6 The influence of the professional identity intervention on team membership self-esteem

Next to inclusion, it is expected that the professional identity (PI) intervention increases team membership self-esteem. Team membership self-esteem derives from social identity theory, which posits that the self-concept has two dimensions, namely personal identity (i.e., how individuals see themselves) and social identity (i.e., how individuals see

themselves in relation to others; Luhtanen & Crocker, 1992). The latter includes team membership self-esteem. Team membership self-esteem can be defined as the value an individual attaches to his or her role as a team member (Baumeister, Campbell, Krueger, & Vohs, 2003; Ellemers, Kortekaas, & Ouwerkerk, 1999; Luhtanen & Crocker, 1992).

Individuals with a high self-esteem have a positive opinion of their contribution to the team and individuals with a low-esteem have a negative opinion of contribution to the team (Baumeister et al., 2003). Furthermore, team members with high levels of team membership self-esteem speak up more, take more initiative, have more confidence in their own abilities and see themselves as valuable team members (Baumeister et al., 2003; De Cremer & Oosterwegel, 1999; Pilegge, & Holtz, 1997). Team members increase their level of self-esteem when they experience that their presence is being respected, valued and important to others (Cook-Sather, Des-Ogugua, & Bahti, 2018; Lin, Baruch, & Shih, 2012).

As mentioned before, the concept of team membership self-esteem found its roots in identity theory. However, to the best of knowledge, no link has been made between team membership self-esteem and PI. Therefore, this study adds to existing identity theories by associating team membership self-esteem and PIs. During the PI intervention team members discuss, on the basis of the corresponding PIs, how every student can contribute to the team task. Every student looks at the team task individually and discusses with team members which student takes on certain sub-tasks. Consequently, students see that they are needed to carry out the team task and that their team is capable of completing the team task. Ultimately, more team members have higher team membership self-esteem. As a result, the following hypothesis is formulated:

> Hypothesis 3: *The professional identity intervention leads to higher levels of team membership self-esteem among students in the intervention group than among students in the non-intervention group.*

2.7 This study

In the current study an intervention is developed that aims to profit from the diversity of international and interdisciplinary project teams. The study focuses on students in technical study programs in higher vocational education. The intervention contains different elements to identify team members' PI and reflect jointly on the PIs in the team. The latter will also show team members how these PIs can be used during the team task. It is expected that the PI intervention has an impact on team learning, team inclusion and team membership self-esteem in teams that participate in the intervention. Data are collected from two online

questionnaires. Teams that do not participate in the intervention (i.e., non-intervention group), only fill the questionnaires. Table 2 shows the research model.

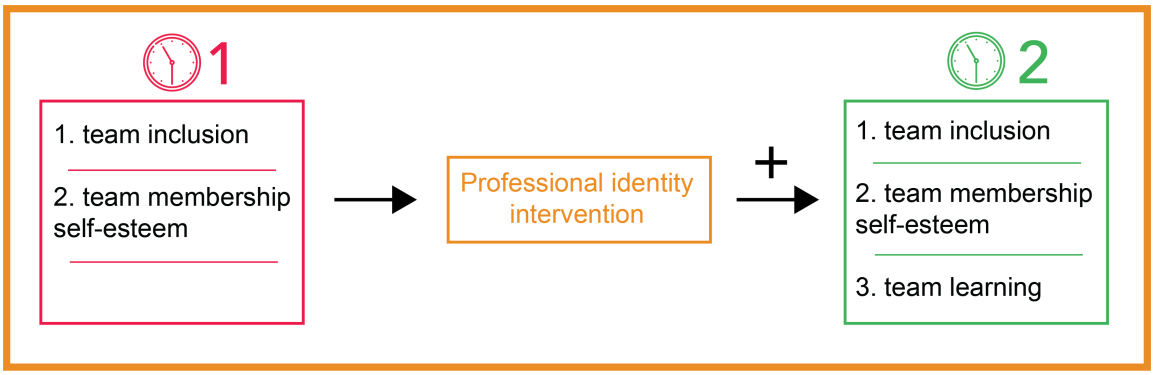


Figure 2. Hypothesized research model.

3. Method

3.1 Participants

The population of focus were students from technical study programs that participated in the international project week at a Dutch higher vocational education institute. The project week was a mandatory course in the curriculum for all first, second- and third-year Life Science, Engineering, and Design (LED) students. Fourth (and fifth) year LED students were obligated to participate in the project week as a team leader.

Due to practical reasons, it was not possible to assign teams randomly to the intervention or non-intervention group. It was decided that teams working in rooms on the same floor were assigned to the same condition. The higher vocational education institute assigned groups to rooms in two buildings based on teams' company assignments. The intervention group included groups that were located at building 1 in rooms at the ground, first, second and fourth floor. The non-intervention group included groups that were located on the third floor in building 1 and the ground and first flour in building 2. Three groups were eliminated from the data set due to their accidently participation in both the intervention and non-intervention group.

In total, 872 students participated in the study. We only included students who participated in both the first and second wave of this study, and therefore, the final sample included $n = 605$ students (14.50% women). The intervention group included 350 students (72 teams) and the non-intervention group 255 students (69 teams). Students ranged in age from 16 to 33 years ($M = 20.63$ years, $SD = 2.25$). The majority of the participants studied mechanical engineering (26.80%) and mechatronics (18.70%). Most of the participants had

the Dutch nationality (82.10%) and participants also reported Dutch as their language primarily spoken in their team (50.20%) followed by a mix of English and Dutch (31.90%). Regarding team composition, 31.20% of the teams were internationally diverse (i.e., at least one team member had another nationality). However, 75.60% of the teams were diverse based on educational program. That is, in 75.60% of the teams, at least half of the team studied at different study programs. Moreover, 47.11% of the teams were gender diverse (i.e., teams that include at least one women). Table 1 shows different demographics of this study.

Table 1

Demographics of Study (N=605)

	n	*%*
Gender		
Men	516	85.40
Women	88	14.50
Educational institution		
Dutch vocational education	546	90.20
International vocational education	51	8.40
Higher secondary education	8	1.30
Nationality		
Dutch	497	82.10
Other	108	17.90
Educational program		
Mechanical Engineering	162	26.80
Mechatronics	113	18.70
Industrial product design	78	12.90
Technical computer science	73	12.10
Electrical engineering	63	10.40
Applied physics	47	7.80
Other	29	4.80
Chemical technology	13	2.10
Chemistry	11	1.80
Technical business	8	1.30

3.2 Procedure

The international project week started on Monday with a general opening. Afterwards, all students received their group number and went to their workstations. Once they got to their workstations, the team leader received instructions for participation in this research. In both groups the team leader received instructions for filling out the first questionnaire (T1; Appendix 1). Only the intervention group received additional instructions for participation in the PI intervention (i.e., instructions; Appendix 2).

Professional identity intervention (only intervention group). The professional identity (PI) intervention included two components. This first component was focused on the individual. Students received insight into their own PI. The second part of the intervention was focused on the team task. Team members became aware of the PIs in the team and how

these could contribute to the team task. The content of the intervention is explained in more detail below.

The first part of the PI intervention included the identification of students' PI. The PI was identified with a brief version of the Career Compass (see Van Veelen, Endedijk, Van Hattum-Janssen, Disberg - Van Geloven, & Möwes, 2018). The Career Compass measured PI profiles (i.e. innovator, team player, analyst, all-rounder and individualist; Endedijk et al., 2019). Figure 3 gives an overview of each profile. Each PI profile is based on four dimensions, namely interests, values, personalities and competencies. Each dimension consists of several factors. For this study, the Career Compass was adapted to 26 items, with all factors being measured with two items. Appendix 3 provides a table with all dimensions, factors, items and corresponding scores for this study.

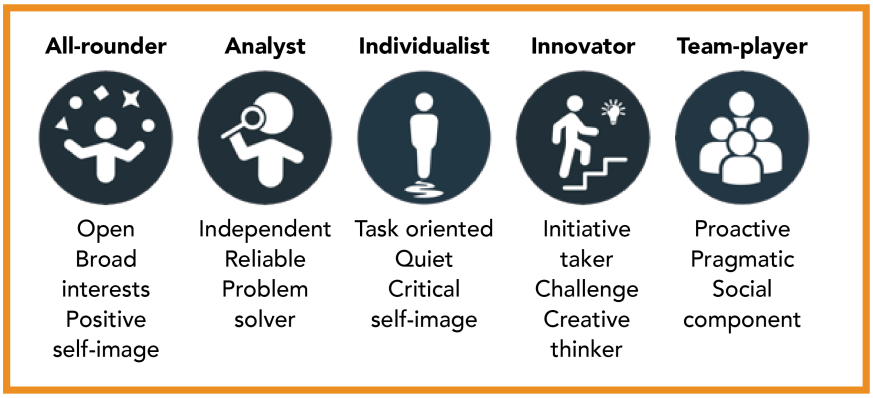


Figure 3. Professional Identity Profiles.

Students indicated per item to what extent they identified themselves in comparison to other technical students. At the end, the test generated a score, which revealed which profile fitted the student best. For example, a student that indicated identifying above average in comparison to other students for "*I like meeting up with friends*", "*I like social activities*", "*I like strategic games*", and "*I like solving puzzles*" was likely to be an all-rounder. Appendix 3 gives a detailed overview of this scoring process. After the test, students used the profile scores to fill out an individual worksheet. This worksheet used different steps to make students aware of their PI and explained how that identity fitted them. Appendix 4 shows all the materials that students used during the intervention.

The second component of the intervention focused on the team. During this step, students looked at the existing PI in the team and became aware of each other's expertise. Students identified the different tasks that took place during the project week and thought about how they felt about each tasks. Did it fit their PI? Did it not fit their PI? Or did it feel like a challenge? Each student demonstrated this by placing post-its on the team board (i.e.,

red post-it: it does not fit me, blue post-it; this fits me or yellow post-it: it feels like a challenge). Consequently, team members discussed how everyone could contribute to the team task.

At follow-up, all measures were identical for the intervention and non-intervention group. Both groups received a second questionnaire via a link on paper or email on Tuesday (T2; Appendix 5). This questionnaire included questions about *team inclusion, team membership self-esteem, team identification, team learning, team efficacy, team leader support* and *subjective team performance*. Ten days later, on Monday, students received the third questionnaire (T3; Appendix 6). This questionnaire included questions about *technical identity, attitude towards the project week* and *subjective team diversity*.

Data were collected with approval from the ethics committee of the University of Twente and participation in this study was voluntarily. The intervention was not a mandatory assignment and even without participation in this study students could receive a sufficient grade for the project week. At the end of the first questionnaire, students filled out the informed consent form (Appendix 1). Students were motivated to participate as incentives were provided for the completion of each questionnaire (i.e., a cake for the team after questionnaire 1, a warm canteen snack after questionnaire 2, and chance on winning 100 euro after questionnaire 3). In addition to these motivations, the teachers of the Dutch higher vocational education institute also motivated the students personally.

3.3 Design

During this study, a quasi-experimental, longitudinal design was applied to see whether an intervention in diverse teams had an effect on *team learning, team inclusion* and *team membership self-esteem*. This was a quasi-experimental design, because participants were not randomly assigned to the intervention or non-intervention group (Babbie, 2016). Participants were located based on their assignments during the project week. In addition, this design is longitudinal, because this study collects data of the same students using three moments in three weeks (Babbie, 2016)[1].

3.4 Measures

This study is part of a larger research project and only gives details of the measurements relevant to the current study. For an overview of all measurements, please contact the examination committee.

---

[1] *Team learning* was only measured at time two and was therefore not longitudinal.

Team learning. *Team learning* was measured at time two with eleven items (Van den Bossche et al., 2011; Van Offenbeek, 2001; Edmonson, 1999; for example, "In this team, we share all relevant information and ideas we have."), on a 5-point Likert-type scale (1=*totally disagree*, 5=*totally agree*). After data was collected, a principal axis factoring analysis with oblique rotation was implemented on the outcomes of the questionnaire. The factor analyses confirmed that all eleven items belonged to one factor (i.e., factor loadings of the items ranged between .32 and .63). Cronbach's α was .88, which indicates a high internal consistency for *team learning*.

Team inclusion. *Team inclusion* was measured at time one and two with six items (Jansen, et al., 2014; for example, "I expect that all team members will feel included" and "I think that all team members feel included"), on a 5-point Likert-type scale (1=*totally disagree*, 5=*totally agree*). After data was collected, a principal axis factoring analysis with oblique rotation was implemented on the outcomes of the questionnaire. The factor analyses did not confirm that all six items belonged to one factor (i.e., factor loadings of two items were .22). After removing two items, the factor analysis showed that the four items belonged to one factor (i.e., factor loadings of four items ranged between .56 and .78 (T1) and between .33 and .56 (T2)). Cronbach's α indicates a high internal consistency for *team inclusion* (i.e., T1: α = .77; T2; α = .79).

Team membership self-esteem. *Team membership self-esteem* was measured at time one and two with five items (Luhtanen & Crocker, 1992; for example, "I expect to be a worthy member of my project team" and "I feel like a worthy member of my project team"), on a 5-point Likert-type scale (1=*totally disagree*, 5=*totally agree*). After data was collected, a principal axis factoring analysis with oblique rotation was implemented on the outcomes of the questionnaire. The factor analyses confirmed that all five items belonged to one factor (i.e., factor loadings of four items ranged between -.23 and -.82 (T1) and between .46 and .84 (T2)). Cronbach's α indicates a high internal consistency for *team membership self-esteem* (i.e., α = .78 for T1 and T2).

3.5 Data analysis

Descriptive statistics and correlations between the variables were calculated in order to investigate the potential influence of background variables (e.g., *age*) on the relationship between the intervention and study variables and to investigate the possibility of selection bias. Separate analyses were conducted on the three outcomes. To investigate the influence of the intervention on *team learning*, this study conducted an ANCOVA (team learning was only

measured at time 2). In addition, repeated measures ANCOVA's were applied to investigate if the intervention caused any changes in *team inclusion* and *team membership self-esteem*. The assumptions of the repeated measure analyses were all met (i.e., sphericity was approved as this study included two conditions and all independent variables were normally distributed; Field, 2009).

4. Results

4.1 Correlations

Descriptive statistics and correlations between relevant descriptive variables (i.e., *age, gender, nationality and known team members*) and study variables are shown in Table 2 and Table 3. Using the correlations that are shown in Table 3, this study investigated whether descriptive variables were associated with study variables. Before the intervention, *gender* negatively correlated with *team membership self-esteem* in the intervention group, $r = -.16$, $p < .05$, which implies that women reported lower levels of *team membership self-esteem* compared to men. However, in the non-intervention group, *gender* did not significantly correlate with *team membership self-esteem*, suggesting a potential selection effect (i.e., differences between intervention and non-intervention group before intervention). For both the intervention and non-intervention group, *age* was positively significantly associated with *team membership self-esteem*, $r = .13$, $p < .05$; $r = .21$, $p < .05$, which implies that on average older students are more likely to have a higher *team membership self-esteem*.

Table 2

Descriptive Statistics and Correlations of Demographic and Study Variables (n=605)

	M	*SD*	1	2	3	4	5	6	7	8	9	10
1. Intervention[a]	.42	.49	-									
2. Age	20.63	2.26	.03	-								
3. Gender[b]	.15	.35	.01	-.08	-							
4. Nationality[c]	.18	.38	.00	.29*	.14*	-						
5. Known team members	1.69	1.64	-.06	.05	.03	.09*	-					
6. Team learning	3.88	.54	.08	.07	.02	.16*	.08*	-				
7. Team inclusion 1	4.02	.62	-.07	.01	.06	.01	.01	.31*	-			
8. Team inclusion 2	4.15	.61	.02	.01	.06	.04	.03	.62*	.40*	-		
8. Membership self-esteem 1	3.71	.63	-.05	.16*	-.13*	-.05	-.01	.23*	.42*	29*	-	
10. Membership self-esteem 2	3.88	.64	.01	.11*	-.09*	-.06	-.01	.47*	.25*	.50*	.52*	-

Note. Study variables were measured on a 5-point Likert scale, with higher scores indicating higher levels.

*$p < .01$

[a]Intervention was coded 0 for intervention group, 1 for non-intervention group;

[b]Gender was coded 0 for men, 1 for women;

[c]Nationality was coded 0 for Dutch, 1 for non-Dutch nationalities.

Table 3

Descriptive statistics (M, SD, r) for Demographic and Study Variables Separately for the Intervention group (n = 350; Below the Diagonal) and Non-Intervention group (n = 605; Above the Diagonal)

	Intervention		Non-intervention										
	M	*SD*	*M*	*SD*	1	2	3	4	5	6	7	8	9
1. Age	20.57[a]	2.23	20.73[a]	2.29	-	-.07	.25*	.11	.04	-.01	.00	.21*	.15*
2. Gender[c]	.14[a]	.35	.15[a]	.36	-.09	-	.12*	-.01	.01	.07	-.03	-.09	-.12
3. Nationality[d]	.18[a]	.38	.18[a]	.38	.33*	.15*	-	.07	.16*	.06	.04	-.06	-.14*
4. Known team members	1.78[a]	1.81	1.56[a]	1.38	.02	.06	.10	-	-.02	.02	-.04	.02	-.06
5. Team learning	3.84[a]	.56	3.93[a]	.51	.08	.03	.16*	.14*	-	.28*	.62*	.24*	.46*
6. Team inclusion 1	4.06[a]	.62	3.97[a]	.61	.03	.06	-.02	-.01	.34*	-	.41*	.54*	.32*
7. Team inclusion 2	4.14[a]	.63	4.16[a]	.59	.02	.12*	.04	.06	.63*	.40*	-	.37*	.50*
8. Membership self-esteem 1	3.74[a]	.62	3.68[a]	.63	.13*	-.16*	-.00	-.03	.24*	.33*	.23*	-	.56*
9. Membership self-esteem 2	3.87[a]	.65	3.89[a]	63	.08	-.06	-.00	.02	.48*	.21*	.50*	.50*	-

Note. Study variables were measures on a 5-point Likert scale, with higher scores indicating higher levels.

*$p < .05$

[a, b] Means with different subscripts are significantly different according to a *t*-test, $p < .05$;

[c] Gender was coded 0 for men, 1 for women;

[d] Nationality was coded 0 for Dutch, 1 for non-Dutch nationalities.

After the intervention, *age* also showed a positive significant association with *team membership self-esteem*, but only for the non-intervention group, $r = .15$, $p < .05$. In addition, a positive significant association between *gender* and *team inclusion* was found for the intervention group, $r = .12$, $p < .05$, which implies that, on average, women were more likely to have higher feelings of inclusion than men. Furthermore, *known team members* was

positively associated with *team learning*, $r = .14$, $p < .05$. This implies that, on average, participants who knew more team members were more likely to have a higher score on *team learning*. Results also revealed a positive significant association between *nationality* and *team learning* for both the intervention and non-intervention group, $r = .16$, $p < .05$, which implies that students with other nationalities learned more than Dutch students. Concluding, as this study is interested in the effect of the intervention on study variables, regardless of, for example, whether team members already knew each other or were women, this study used *age, gender, nationality* and *known team members* as covariates. Table 2 and 3 show that correlations between study variables were all positively significant, suggesting associations between all study variables.

To assess whether the data should be aggregated to the team level, we computed intraclass correlation coefficients (ICC). ICCs were .29 for *team learning*, .38 for *team inclusion* 1 and 2, .39 for *team membership self-esteem* 1 and .41 for *team membership self-esteem* 2. This indicates that 29% to 41% of the total variance in an individual rating's can be explained by their specific team membership (Field, 2009).

4.2 Hypothesis testing

Team learning. An ANCOVA controlling for *age, gender, nationality* and *known team members* revealed that the intervention had a small significant effect on *team learning*, $F(1, 602) = 4.12$, $p = .042$, partial $\eta^2 = .01$. However, in contrast to hypothesis 1, this effect shows that on average the participants in the non-intervention group ($M = 3.93$, $SD = .51$) reported higher levels of *team learning* than the participants in the intervention group ($M = 3.85$, $SD = .56$). In addition, the covariate *nationality* ($M = .18$, $SD = .38$) and *known team members* ($M = 1.69$, $SD = 1.64$) were (marginally) significantly positively related to *team learning* (*nationality*, $F(1, 598) = 12.36$, $p < .01$, partial $\eta^2 = .02$; *known team members*, $F(1, 598) = 3.15$, $p = .076$, partial $\eta^2 = .01$). This suggests that on average students who knew more team members and students with foreign nationalities reported learning more in a team.

Team inclusion. A repeated measures ANCOVA controlling for *age, gender, nationality* and *known team members* revealed that the intervention had no significant effect

on *team inclusion*, $F(1, 598) = .31$, $p = .442$, partial $\eta^2 = .00$. Contradicting hypotheses 2, this suggests that the intervention did not have an effect on *team inclusion* among participants. Moreover, findings showed that *gender* ($M = .15$, $SD = .35$) was positively marginally significant related to *team inclusion*, $F(1, 598) = 3.00$, $p = .084$, partial $\eta^2 = .01$. This gives a small suggestion for the fact that, on average, women had higher feelings of *team inclusion* than men.

Team membership self-esteem. A repeated measures ANCOVA controlling for *age, gender, nationality* and *known team members* revealed that the intervention had no significant effect on *team membership self-esteem*, $F(1, 598) = .33$, $p = .564$, partial $\eta^2 = .00$. Contradicting hypotheses 2, this shows that the intervention did not have an effect on *team membership self-esteem*. Furthermore, analyses revealed that *age* ($M = 20.63$, $SD = 2.25$), *gender* ($M = .15$, $SD = .35$) and *nationality* ($M = .18$, $SD = .38$) were significantly positively related to *team membership self-esteem* (*age*, $F(1, 598) = 18.00$, $p < .01$, partial $\eta^2 = .03$; *gender*, $F(1, 598) = 5.51$, $p = .019$, partial $\eta^2 = .01$; *nationality*, $F(1, 598) = 5.56$, $p = .019$, partial $\eta^2 = .01$). This indicates that on average older students, women and foreign students were more likely to have higher *team membership self-esteem* than younger students, men and students with Dutch nationalities.

To conclude, the intervention did not increase *team learning*, it even appears to obstruct *team learning* as the non-intervention group reported higher levels of *team learning* than the intervention group. In addition, results show that the intervention had no significant influence on *team inclusion* and *team membership self-esteem*, but revealed that potentially, the intervention only worked for women. Therefore, exploratory analyses were performed to further investigate the difference between men and women.

4.3 Exploratory analysis

Gender. Correlational data revealed that *gender* correlated with *team inclusion* and *team membership self-esteem*. Also the results of the repeated measures ANCOVA showed that the intervention might be related to *gender*, indicating that on average women were more likely to have higher feelings of *inclusion* and *membership self-esteem* than men. Therefore, the hypotheses were tested again among women ($n = 88$) and men ($n = 516$) separately. However, (repeated) measures ANCOVA controlling *age, nationality* and *known team members* revealed that the intervention had no significant effect on *team learning* ($p = .359$) and *team membership self-esteem* ($p = .603$) for women. Nevertheless, a positive marginally

significant effect gives a small indication that the intervention led to higher feelings of *inclusion* for women, $F(1, 83) = 3.13$, $p = .081$, partial $\eta^2 = .04$.

For men, the repeated measures ANCOVA controlling for *age, nationality* and *known team members* revealed no significant effect of the intervention on *team membership self-esteem* ($p = .605$) and *team inclusion* ($p = .777$). The ANCOVA controlling for *age, nationality* and *known team members* revealed that the intervention had a negative, marginally effect to *team learning* for men, indicating that men in the non-intervention group ($M = 3.84$, $SD = .57$) scored higher on *team learning* than men in the intervention group ($M = 3.93$, $SD = .52$), $F(1, 511) = 3.59$, $p = .059$, partial $\eta^2 = .01$.

Gender diverse teams. To further investigate the effects of the intervention on study variables for *gender*, the hypotheses were again tested in gender diverse teams (i.e., teams that include at least one women, $n = 285$). An ANCOVA controlling for *age, gender, nationality* and *known team members* revealed that the intervention had no significant effect on *team learning*, $p = .378$. Furthermore, a repeated measures ANCOVA controlling for *age, gender, nationality* and *known team members* revealed that the intervention had a positive significant effect on *team inclusion,* $F(1, 278) = 3.87$, $p = .050$, partial $\eta^2 = .01$. Following hypothesis 2, this indicates that on average the intervention led to significantly higher feelings of *inclusion* in the intervention group ($M = 4.20$, $SD = .65$) than in the non-intervention group ($M = 3.94$, $SD = .58$). Moreover, a repeated measures ANCOVA controlling for *age, gender, nationality* and *known team members* revealed that the intervention had a positive marginally significant effect on *team membership self-esteem*, $F(1, 278) = 3.60$, $p = .059$, partial $\eta^2 = .01$. Partly inline with hypothesis 3, this result shows that on average participants in gender diverse teams in the intervention group ($M = 3.91$, $SD = .64$) were more likely to have higher *membership self-esteem* than participants in the non-intervention group ($M = 3.84$, $SD = .65$).

To conclude, results revealed a marginally positive effect of the intervention on *team inclusion* for women. Men showed a marginally effect of the intervention on *team learning,* suggesting that men in the non-intervention group scored higher on *team learning* than men in the intervention group. For gender diverse teams, the intervention did significantly increase *team inclusion*. Regarding *team membership self-esteem*, results show a marginally, positive significant effect. The intervention did not show a significant effect on *team learning* for gender diverse teams.

Nationality. During the intervention, researchers observed that teams were mainly Dutch, which may indicate why the intervention had no impact in internationally diverse teams. Therefore, the hypotheses were also tested in fully Dutch teams (i.e., teams that

included only Dutch students; n = 377). Results revealed a negative significant effect in Dutch teams for the intervention on *team learning*, $F(1, 371) = 5.69$, $p = .018$, partial $\eta^2 = .02$, which indicates that the non-intervention group ($M = 3.97$, $SD = .49$) reported higher *team learning* than the intervention group ($M = 3.82$, $SD = .54$). No significant effects were found for *team inclusion* ($p = .663$) and *team membership self-esteem* ($p = .790$). To verify that the intervention did not work in international teams, the hypothesis were also tested in international teams (i.e., teams that included at least one international student, n = 189). As expected, results revealed that the intervention had no significant effect on *team learning* ($p = .542$), *team inclusion* ($p = .392$) and *team membership self-esteem* ($p = .382$) for international teams.

To summarize, the PI intervention did not increase *team learning, team inclusion* or *team membership self-esteem* in international and interdisciplinary teams, the intervention even appears to restrain *team learning* as the non-intervention group reported higher levels of *team learning* than the intervention group. Exploratory analysis showed that for women, the intervention had a marginally positive effect on *team inclusion*. No significant effects for women of the intervention on *team learning* and *team membership self-esteem* were found. For men, the intervention showed a marginally negative significant effect on *team learning*, but revealed no effect on *team inclusion* or *team membership self-esteem*. Regarding gender diverse teams (i.e., teams that included at least one women), the intervention did significantly increase *team inclusion* and had a marginally positive significant effect on *team membership self-esteem*. No significant effects for *team learning* were found. Furthermore, analysis revealed no significant positive effects of the intervention on study variables for Dutch or international teams. Again, only a negative effect was found of the intervention on *team learning* for Dutch teams.

5. Discussion

The current study developed an intervention that aimed to let team member's profit from the diversity within international and interdisciplinary project teams. In the following sections conclusions and the extent to which these conclusions correspond with existing research will be discussed. Afterwards, practical implications, possible limitations and suggestions for further research will be offered. Subsequently, final conclusions about the current research will be drawn.

5.1 Explaining the professional identity intervention

This study investigated if the professional identity (PI) intervention had an effect on *team learning, team inclusion* and *team membership self-esteem* in international and interdisciplinary teams. Literature revealed that diverse teams have the potential to flourish through the process of information elaboration (e.g., Van Knippenberg et al., 2004). As information elaboration entails sharing, integrating and exchanging information, it was predicted that the intervention, in which team members identified one's own PI and jointly reflected on the PIs in the team, improved in information elaboration. Through the activation of information elaboration in teams, the PI intervention was likely to improve *team learning, team inclusion* and *team membership self-esteem* in student project teams.

A first important conclusion from this study is that the PI intervention, in which participants were made aware of their own PI and the PIs of team members, did not facilitate but obstruct *team learning.* A possible explanation is that the intervention caused teams to have less time for the company assignment, which made teams feel frustrated and discouraged. During this study, researchers noted that some teams stopped with the intervention before completing it, because they claimed that the intervention caused them to run out of time for the company assignment. Following research that studies *team learning* as a process (i.e., teams need to mature in order for *team learning* to occur; Londen & Sessa, 2007; Raes, Kyndt, Decuyper, Van den Bossche, & Dochy, 2015), teams in the intervention group remained in lower phases of team development due to their frustration and discouragement (e.g., presence of anxiety, power struggles, conflict and the search for identity and definition of roles; Londen & Sessa, 2007; Raes et al., 2015). On the other hand, teams in the non-intervention group started the project week more motivated, making it more logical that these teams matured faster (e.g., higher phases: negotiation with others, sharing information and having a good sense of where the knowledge and expertise lies within the team; Londen & Sessa, 2007; Raes et al., 2015). Consequently, teams in the intervention group scored lower on *team learning* than teams in the non-intervention group. Hence, this study claims that research should implement a placebo intervention in the non-intervention group to make sure that both groups have an equal amount of time for the company assignment.

Secondly, this study concludes that the PI intervention, in which team members found out each other's uniqueness and learned how those unique characteristics could contribute to the team task (i.e., improve *team inclusion* and *team membership self-esteem* among team members; Cook-Sather et al., 2018; Ely & Thomas, 2001), did not facilitate *team inclusion* or

team membership self-esteem in international and interdisciplinary student project teams. A possible explanation is that teams in the intervention did not devote enough time to jointly reflect on each other's PI. This explanation complements research of Zellmer-Bruhn, Maloney, Bhappy and Salvador (2008), showing that in teams with invisible differences, team members need to discuss their differences for a longer period of time before they can uncover and use those differences during team tasks. When there is too little interaction between team members, team members' unique characteristics are not revealed and teams are more likely fall into social categorization processes (Zellmer-Bruhn et al., 2008). On this basis, this study argues that teams should place more emphasis on identifying the PIs of team members and discuss in greater detail how those PIs can contribute to the team task.

Besides the impact of the intervention in international and interdisciplinary diverse teams, this study looked at the effect of the intervention in gender diverse teams, because social categorization processes (e.g., intergroup bias, stereotyping) are more likely to occur within such teams. Especially among women, the risk of stereotyping during the intervention was particularly high, as women constitute a visible minority in the team (Van Knippenberg & Dijksterhuis, 2000).

An important conclusion deriving from this is that the PI intervention improved *team inclusion* and potentially decreased social categorization processes by underscoring uniqueness in gender diverse teams. It is feasible that this conclusion contributes to the concept of inductive social identity formation, in which unique contributions of team members form a team identity (belongingness construct; Chung et al., 2020; Jans et al., 2012). The ability that team members have to build a team identity determines if team members feel (emotionally) involved with their group and thus increase feelings of inclusion (Ellemers et al., 1999). It seems that gender-diverse teams are more likely to build a team identity and feel *inclusive*, since team members are easily distinguishable from each other and therefore need less interaction before the unique contributions of the team members are revealed. This reasoning again complements research of Zellmer-Bruhn et al. (2008) showing that teams with visible differences need less time to figure out how to use unique characteristics during team tasks. This highlights the importance for new research of emphasizing uniqueness and activating information elaboration in gender diverse teams, by showing that if teams elaborate upon their unique contributions, they can form a team identity and eventually improve their feelings of *inclusion*.

Moreover, this conclusion supports the categorization-elaboration model (CEM; an Knippenberg et al., 2004) by showing that gender diverse teams have the potential to flourish.

However, the CEM focuses on the effects of diversity on *team performance*. Van Knippenberg et al. (2004) expect that, within the CEM, the effects of diversity on affective processes, such as *team inclusion,* reflect the same process. So, this study extends the CEM by acknowledging that *team inclusion* can be facilitated in gender diverse teams by activating information elaboration and eliminating social categorization. This may serve as a starting point for new research to further investigate the effects of diversity on different affective processes, as this study illustrates that the effects of diversity on affective processes are indeed likely to reflect the same process as the effects of diversity on *team performance*.

Additionally, the study establishes a link between PI and the CEM by implicating that PIs can be used to activate information elaboration and reduce social categorization in gender diverse teams. New research should use this study as a lead to further investigate the link between PI and the CEM in international and interdisciplinary teams. Conclusions from those studies can be used to further optimize the intervention in the current study and profit from the diversity of international and interdisciplinary teams.

Finally, this research implicates that emphasizing both belongingness and uniqueness are important for facilitating *team inclusion*. This builds on recommendations from other *inclusion* studies (Chung et al., 2020; Ely and Thomas, 2001; Nishii, 2013; Shore et al., 2011) and serves as a recommendation for new research to include both belongingness and uniqueness when measuring *team inclusion.*

5.2 Practical implications

The professional identity (PI) intervention in this study seems promising, as it appears to be effective in gender diverse teams. Therefore, practice should take into account the PI intervention when students and professionals start to work together in teams. Using the intervention as an introductory assignment will help team members to better use each other's differences during team tasks. However, the intervention should be adjusted slightly by paying more and longer attention to the PIs of different team members. That way, differences between team members are discussed more extensively and the different elements of the CEM (Van Knippenberg et al., 2004) are more emphasized. Consequently, it is likely that the PI intervention gives more successful outcomes in diverse teams. However, more research is necessary to test this expectation.

5.3 Limitations and future research

Like any other study, this research had its limitations. To begin with, this study did not include much international students, limiting the generalizability of the conclusions to internationally diverse teams. Against expectations, results showed that only 17.90% of the students were international. The higher vocational educational institute reported that past years each team included at least one international student. However, the amount of international students decreased due to the coronavirus (i.e., most Chinese students canceled). Thus, most teams were completely Dutch (68.80% of the teams representatively). Further research is needed to validate the current conclusions in internationally diverse student teams.

Second, the relatively high ICC's among study variables (i.e., ICC varied between .29 and .40) indicates that the responses of different team members were highly similar within teams compared to between different teams (Bliese, 2000). Therefore, future research should conduct a three-level multilevel model to account for this dependency. In this multilevel analysis, *time* should reflect the first level (e.g., two measurement occasions), and should be nested within individual students (level 2) and within teams (level 3).

A third limitation is that *team learning* was only measured at time two. This may be the reason why we did not find the expected effect of the intervention on *team learning*. Future research should include *team learning* at both measurement occasions (i.e., before and after the intervention) and validate the current conclusions in international and interdisciplinary diverse student teams.

Fourth, the possibility of ceiling effects on *team inclusion* and *team membership self-esteem* limits the validity of this research. A ceiling effect makes it questionable whether the instrument accurately measured the dependent variable, because the highest score, or close to the highest score, on a test is reached (Taylor, 2012). As a result, the intervention in a study displays no effect on the dependent variable (Hessling, Traxel, & Schmidth, 2011). In this study, the average scores of *team inclusion* and *team membership self-esteem* were very high on both measurement occasions. In combination with the absence of an effect of the intervention on *team inclusion* and *team membership self-esteem,* we think that a ceiling effect probably occurred. To detect ceiling effects in an early stage or to avoid the possibility of ceiling effects, future research should pay close attention to the items in the questionnaire, maybe even extend the range of the Likert scale and use pilot testing (Hessling et al., 2011).

A final limitation is that the PI intervention has not been validated among technical students before implementation. Research shows that evaluation is a critical feature during the development of an intervention, in which the effectiveness of an intervention is confirmed or

disproved (Nieveen & Folmer, 2013). Therefore, future research is needed to evaluate the different components of the intervention (e.g., exposure unique contributions, activating of information elaboration) and confirm the effectiveness of the PI intervention. Consequently, the current conclusions of the PI intervention in international and interdisciplinary teams can be validated.

Following the conclusions and implications, future research should increase the impact of the intervention by letting teams discuss team members' PIs in greater detail and for a longer period of time. Subsequently, team members will receive more information about each other, get to know each other better and the allocation of expertise will no longer be based on inferences students make (Kitaygorodskaya, 2008; Wegner, 1986; Zellmer-Bruhn et al., 2008). Consequently, the information elaboration perspective will be further emphasized and unique contributions of team members are more exposed. Such an intervention is expected to show more significant results on different team outcomes (e.g., *team learning*) in internationally and interdisciplinary diverse teams. Future research should determine if such intervention indeed has positive effects on the different team outcomes.

Finally, this study previously argued that the intervention had an effect in gender diverse teams through the creation of a team identity. Previous research also indicated a relation between the exposure of team members' unique contributions and the creation of a team identity (Jans et al., 2012; Van Veelen & Ufkes, 2019). Additional research is needed to confirm the effect of the PI intervention on team identity. Therefore, it is recommended for future research to include team identification as a study variable.

6. Conclusions

To summarize, this study aimed to create an intervention that takes better advantage of the diversity of international and interdisciplinary project teams. The intervention contained different elements to identify one's own professional identity (PI) and reflect jointly on the PIs in the team. The latter also showed team members how these PIs could be used during the team task. It appeared that the PI intervention negatively increased *team learning* and not predict *team inclusion* and *team membership self-esteem* in international and interdisciplinary student teams. However, in gender diverse teams, the intervention did improve *team inclusion*. These conclusions suggest that teams need to put more emphasize on figuring out team members' PIs and discuss how those PIs can contribute to the team task. It is proposed

that altering the intervention in that way will possibly reveal more positive results in international and interdisciplinary teams.

References

Academy of Medical Royal Colleges. (2020). *Developing professional identity in multi-professional teams*. Londen, United Kingdom.

Ashforth, B. E., Harrison, S. H., & Corley, K. G. (2008). Identification in organizations: An examination of four fundamental questions. *Journal of Management*, *34*(3), 325–374. doi:10.1177/0149206308316059

Babbie, E. (2016). *The practice of social research* (14nd ed.). Bosten: Cengage Learning.

Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest*, *4*, 1–44. doi:10.1111/1529-1006.01431

Becker, J. C., & Wagner, U. (2009). Doing gender differently: The interplay of strength of gender identification and content of gender identity in predicting women's endorsement of sexist beliefs. *European Journal of Social Psychology*, *39*, 487–508. doi:10.1002/ejsp.551

Beijaard, D., Meijer, P. C., & Verloop, N. (2004). Reconsidering research on teachers' professional identity. *Teaching and Teacher Education*, *20*(2), 107–128. doi:10.1016/j.tate.2003.07.001

Bettencourt, B. A., Molix, L., Talley, A. E., & Sheldon, K. M. (2006). Psychological need satisfaction through social roles. In T. Postmes & J. Jetten (Eds.), *Individuality and the Group: Advances in Social Identity* (pp. 196–214). Thousand Oaks: SAGE publications. doi:10.4135/9781446211946.n11

Bliese, P. D. (2000). Within-group agreement, non-independence and reliability. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations. Foundations, extensions, and new directions.* (pp. 349–381). San Francisco: Jossey-Bass.

Chung, B. G., Ehrhart, K. H., Shore, L. M., Randel, A. E., Dean, M. A., & Kedharnath, U. (2020). Work group inclusion: Test of a scale and model. *Group and Organization Management*, *45*, 75–102. doi:10.1177/1059601119839858

Cook-Sather, A., Des-Ogugua, C., & Bahti, M. (2018). Articulating identities and analyzing belonging: a multistep intervention that affirms and informs a diversity of students. *Teaching in Higher Education*, *23*(3), 374–389. doi:10.1080/13562517.2017.1391201

De Cremer, D., & Oosterwegel, A. (1999). Collective self-esteem, personal self-esteem, and collective efficacy in in-group and outgroup evaluations. *Current Psychology*, *18*(4), 326–339. doi:10.1007/s12144-999-1007-1

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, *44*(2), 350–383. doi:10.2307/2666999

Ellemers, N., Kortekaas, P., & Ouwerkerk, J. W. (1999). Self-categorisation, commitment to the group and group self-esteem as related but distinct aspects of social identity. *European Journal of Social Psychology*, *29*(23), 371–389. doi:10.1002/(sici)1099-0992(199903/05)29:2/3<371::aid-ejsp932>3.3.co;2-l

Ely, R. J., & Thomas, D. A. (2001). Cultural diversity at work: The effects of diversity on work group processes and outcomes. *Administrative Science Quarterly*, *46*, 229–273. doi:10.1017/CBO9781107415324.004

Endedijk, M., Ten Berg, D., Nieuwenhuis, M., Van Veelen, R., & Van Hattum, N. (2019). Who is the technical professional ? A description of five identity profiles.

Field, A. (2009). *Discovering Statistics Using SPSS*, *3rd Edition*. Thousand Oaks: SAGE publications.

Fitzgerald, A. (2020). Professional identity: A concept analysis. *Nursing Forum*, 1–26. doi:10.1111/nuf.12450

Franz, T. M. (2012). *Group dynamics and team interventions: understanding and improving team performance.* Hoboken: Wiley-Blackwell.

Hessling, R. M., Traxel, N. M., & Schmidt, T. J. (2011). Ceiling Effect. In M. S. Lewis-Beck, A. Bryman, & T. Futing Liao (Eds.), *The SAGE Encyclopedia of Social Science Research Methods* (pp. 105). Thousand Oaks: SAGE publications. doi:10.4135/9781412961288.n44

Hofhuis, J., Mensen, M., Ten Den, L. M., Van den Berg, A. M., Koopman-Draijer, M., Van Tilburg, M. C., … De Vries, S. (2018). Does functional diversity increase effectiveness of community care teams? The moderating role of shared vision, interaction frequency, and team reflexivity. *Journal of Applied Social Psychology*, *48*, 535–548. doi:10.1111/jasp.12533

Homan, A. C., Hollenbeck, J. R., Humphrey, S. E., Van Knippenberg, D., Ilgen, D. R., & Van Kleef, G. A. (2008). Facing differences with an open mind: Openness to experience, salience of intragroup differences, and performance of diverse work groups. *Academy of Management Journal*, *51*(6), 1204–1222. doi:10.5465/AMJ.2008.35732995

Hornsey, M. J., & Jetten, J. (2004). The individual within the group: Balancing the need to belong with the need to be different. *Personality and Social Psychology Review*, *8*(3), 248–264. doi:10.1207/s15327957pspr0803

Jans, L., Postmes, T., & Van der Zee, K. I. (2012). Sharing differences: The inductive route to

social identity formation. *Journal of Experimental Social Psychology*, *48*(5), 1145–1149. doi:10.1016/j.jesp.2012.04.013

Jansen, W., Otten, S., Van der Zee, K., & Jans, L. (2014). Inclusion: Conceptualization and measurement. *European Journal of Social Psychology*, *44*(4), 370–385. doi:10.1002/ejsp.2011

Kitaygorodskaya, N. (2008). Information-processing capabilities as a transactive memory system: A comparative study of two distributed R&D teams. University of Vaasa: Vaasan yliopisto.

Kooij-de Bode, H. J. M., Van Knippenberg, D., & Van Ginkel, W. P. (2008). Ethnic diversity and distributed information in group decision making: The importance of information elaboration. *Group Dynamics*, *12*(4), 307–320. doi:10.1037/1089-2699.12.4.307

Lewis, K. (2003). Measuring transactive memory systems in the field: Scale development and validation. *Journal of Applied Psychology*, *88*(4), 587–604. doi10.1037/0021-9010.88.4.587

Lewis, K., Lange, D., & Gillis, L. (2005). Transactive memory systems, learning, and learning transfer. *Organization Science*, *16*(6), 581–598. doi:10.1287/orsc.1050.0143

Lin, C. P., Baruch, Y., & Shih, W. C. (2012). Corporate social responsibility and team performance: The mediating role of team efficacy and team self-esteem. *Journal of Business Ethics*, *108*(2), 167–180. doi:10.1007/s10551-011-1068-6

Londen, M., & Sessa, V. I. (2007). How groups learn, continously. *Human Resource Development*, *46*(4), 651–669. doi:10.1002/hrm

Luhtanen, R., & Crocker, J. (1992). A collective self-esteem scale: Self-evaluation of one's social identity. *Personality and Social Psychology Bulletin*, *18*(3), 302–318. doi: 10.1177/0146167292183006

Moreland, R. L., & Myaskovsky, L. (2000). Exploring the performance benefits of group training: Transactive memory or improved communication? *Organizational Behavior and Human Decision Processes*, *82*, 117–133. doi:10.1006/obhd.2000.2891

Möwes, R. A. (2016). The career compass: Discovering diversity in STEM students' professional identity and its effects on their intended career choice. Retrieved from http://essay.utwente.nl/69306/

Nieveen, N., & Folmer, E. (2013). Formative evaluation in educational design eesearch. In T. Plomp & N. Nieveen (Eds.), *Educational design research - Part A: An introduction* (pp. 153–169). Enschede: SLO. doi:10.1007/978-1-4614-3185-5_11

Nishii, L. H. (2013). The benefits of climate for inclusion for gender-diverse groups. *Academy*

of Management Journal, 50(6), 1754-1774. doi:10.5465/amj.2009.0823

Pilegge, A. J., & Holtz, R. (1997). The effects of social identity on the self-set goals and task performance of high and low self-esteem individuals. *Organizational Behavior and Human Decision Processes*, *70*, 17–26. doi:10.1006/obhd.1997.2689

Raes, E., Kyndt, E., Decuyper, S., Van den Bossche, P., & Dochy, F. (2015). An exploratory study of group development and team learning. *Human Resource Development Quarterly*, *26*, 5–30. doi:10.1002/hrdq

Shore, L. M., Randel, A. E., Chung, B. G., Dean, M. A., Ehrhart, K. H., & Singh, G. (2011). Inclusion and diversity in work groups: A review and model for future research. *Journal of Management*, *37*(4), 1262–1289. doi:10.1177/0149206310385943

Tajfel, H., & Turner, J. C. (2004). The social identity theory of intergroup behavior. In J. . Jost & J. Sidanius (Eds.), *Key readings in social psychology. Political psychology: Key readings* (pp. 276–293). Hove: Psychology Press. doi:10.4135/9781483346274.n163

Taylor, T. H. (2012). Ceiling Effect. In N. J. Salkind (Ed.), *Encyclopedia of Research Design* (pp. 133–134). Thousand Oaks: SAGE publications. doi:10.4135/9781412961288

Van den Bossche, P., Gijselaers, W., Segers, M., Woltjer, G., & Kirschner, P. (2011). Team learning: Building shared mental models. *Instructional Science, 39*(3), 283-301. doi:10.1007/s11251-010-9128-3

Van der Vegt, G. S., & Bunderson, J. S. (2005). Learning and performance in multidisciplinary teams: The importance of collective team identification. *Academy of Management Journal*, *48*, 532–547. doi:10.2307/20159674

Van Dijk, H., Meyer, B., Van Engen, M. L., & Loyd, D. L. (2017). Microdynamics in diverse teams: A review and integration of the diversity and stereotyping literatures. *Academy of Management Annals*, *11*, 517–557. doi:10.5465/annals.2014.0046

Van Ginkel, W. P., & Van Knippenberg, D. (2008). Group information elaboration and group decision making: The role of shared task representations. *Organizational Behavior and Human Decision Processes*, *105*, 82–97. doi:10.1016/j.obhdp.2007.08.005

Van Knippenberg, D., De Dreu, C. K. W., & Homan, A. C. (2004). Work group diversity and group performance: An integrative model and research agenda. *Journal of Applied Psychology*, *89*, 1008–1022. doi:10.1037/0021-9010.89.6.1008

Van Knippenberg, A., & Dijksterhuis, A. (2000). Social categorization and stereotyping: A functional perspective. *European Review of Social Psychology*, *11*, 105–144. doi:10.1080/14792772043000013

Van Knippenberg, D., & Schippers, M. C. (2007). Work Group Diversity. *Annual Review of*

Psychology, *58*, 515–541. doi:10.1146/annurev.psych.58.110405.085546

Van Knippenberg, D., Van Ginkel, W. P., & Homan, A. C. (2013). Diversity mindsets and the performance of diverse teams. *Organizational Behavior and Human Decision Processes*, *121*(2), 183–193. doi:10.1016/j.obhdp.2013.03.003

Van Offenbeek, M. (2001). Processes and outcomes of team learning. *European Journal of Work and Organizational Psychology*, *10*(3), 303–317. doi:10.1080/13594320143000690

Van Veelen, R., Endedijk, M., Van Hattum-Janssen, N., Disberg - Van Geloven, M., & Möwes, R. (2018). *Bèta-alumni aan het werk: wie kiest er voor de techniek?* Retrieved from https://www.techyourfuture.nl/a-1181/publicaties-mind-the-gap-professionele-identiteit-in-de-techniek

Van Veelen, R., & Ufkes, E. G. (2019). Teaming up or down? A multisource study on the role of team identification and learning in the team diversity. *Group and Organization Management, 44*, 38-71. doi:10.1177/1059601117750532

Wegner, D. M. (1986). Transactive memory: A contemporary analysis of the group mind. In B. Mullen & G. R. Goethals (Eds.), *Theories of Group Behavior* (pp. 185–208). New York: Springer-Verlag. doi:10.1007/978-1-4612-4634-3_9

Wegner, D. M., Giuliano, T., & Hertel, P. T. (1985). Cognitive interdependence in close relationships. *Compatible and Incompatible Relationships*, 253–276. doi:10.1007/978-1-4612-5044-9_12

Zellmer-Bruhn, M. E., Maloney, M. M., Bhappu, A. D., & Salvador, R. (2008). When and how do differences matter? An exploration of perceived similarity in teams. *Organizational Behavior and Human Decision Processes*, *107*, 41–59. doi:10.1016/j.obhdp.2008.01.004

Appendix 1: Questionnaire T1

Hello! You are participating in a study that monitors team collaborations during the Saxion LED international project week!

This research is conducted by Saxion LED & University of Twente. We are curious to learn more about what makes a team collaboration fun and productive during the international project week. Before this research starts, we would like to inform you about some important participation conditions in this research project.

As part of the international project week you are expected to fill out three short questionnaires. Specifically, your assignment is to fill out **two short online questionnaires** during this week (**this one** and one on **Thursday**) and one after the project week. Please do so with great attention and care. When you have filled out all questionnaires you can leave your email address and you have a **chance of winning €100,-** in a prize draw.

Today's questionnaire will consist of two parts. In the first part you will fill out an online questionnaire. In the second part you will do a short test, followed by a group exercise.

Please note: There are no known risks associated with this study. Your answers in this study will remain completely confidential and personal details that you may provide (email address, student number) will be encrypted and saved separately from your answers. In this way we safeguard the anonymity of your responses. Only the researchers from the University of Twente involved in this project have access to the data (not teachers or other students). The University of Twente has certified its data storage and the associated processes according to the ISO/IEC27001 and NEN 7510-standards.

If you have any questions about the research, then please get in touch with: Niek van Toor: n.p.vantoor@saxion.nl or Maaike Endedijk: m.d.endedijk@utwente.nl

Q3 To be able to connect your answers of the questionnaires at three time points, we need some information. Please fill out the following questions.
(Note that all this information will only be used to connect your answers of today to your answers later this week. After your answers have been collected, personal information will be replaced by an anonymous number and removed from the data.)

Q4 **What is the name of your project team?**

(For example: Thales1A)

_____

Q95 **In what room does your project team work? Our room number starts with:**

- S0.
- W0.
- W1.
- W2.
- W3.
- W4.
- Z14.
- Z15.
- I don't know.

Q5 What is your student number?
Not a LED student at Saxion? Please fill in your group number + initials (For example, if your team number is Thales1A and your name is John Doe, type in here: Thales1AJD).

_____

Q6 What is your email address?
Your email address will only be used to send you the second and third questionnaire and to inform you about the outcomes of the prize draw of €100,-.

_____

Q79 **Please enter your email address again for validation purposes.**

_____

Q92 **Please fill out the following questions about your demographic and study background.**

Q7 **What is your age?**

_____

Q8 **What is your gender?**

- Male
- Female
- Other / rather not say

Q9 **What is your nationality?**

- Dutch
- German
- Other, namely _____

Q10 **What is your mother tongue?**

- Dutch
- German
- Other, namely _____

Q11 **What is the name of your educational institution?**

- Saxion
- I am a havo student (Higher General Secondary Education)
- Other, namely _____

Q12 **What is the name of your educational study program?**

▼ Applied Physics/Technische Natuurkunde ... Other

Q96 **If other, please fill out your study program**

_____

Q13 **Which study year are you currently in?**

- 1
- 2
- 3
- 4
- 5 or higher

Q14 **How many times have you participated in the international project week prior to this one?**

- 0, this is my first time.
- 1
- 2
- 3
- 4

Q15 **How many group members does your team have? (including team leader).**

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

Q16 **How many students from your team did you know prior to the project week?**

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

Q18 We are curious to learn about your expectations for the international project week.
Please indicate to what extent you agree with the following 6 statements. (There are no right or wrong answers; click the one that fits you best)

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I am looking forward to this project week.	○	○	○	○	○
I expect this project week to be fun.	○	○	○	○	○
I feel good about this project week	○	○	○	○	○
I find the project assignment very interesting	○	○	○	○	○
I am enthusiastic about the project assignment	○	○	○	○	○
I expect to learn a lot during this project week	○	○	○	○	○

Q17 You are enrolled in a technical study program, or are interested in one. This means that you are educated to become a technical professional. At this moment, how do you feel about becoming a technical professional?
Please indicate to what extent you agree with the following 9 statements at this moment. (There are no right or wrong answers; click the one that fits you best) *At this moment...*

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I definitely see myself becoming technical professional in the future.	○	○	○	○	○
I am proud to become a technical professional.	○	○	○	○	○
Becoming a technical professional has very little to do with how I see myself.	○	○	○	○	○
It is important to me to become a technical professional.	○	○	○	○	○
I am confident that my skills and interests will fit with becoming a technical professional.	○	○	○	○	○
I know what type of technical professional I want to be.	○	○	○	○	○
I have a clear idea on who I will be as a technical professional.	○	○	○	○	○
I know what I need to do to become technical professional.	○	○	○	○	○
I am uncertain about the type of technical professional that I want to be.	○	○	○	○	○

Q19 You have just met your fellow team members. What are your first impressions? Do you think that the members in your project team are very similar or different from each other? Please, answer these questions **individually**: we are interested in your first impressions only. Do not ask your team members for more information.
Please indicate for the following 7 aspects how similar or different you think your team members are. (There are no right or wrong answers; click the one that fits you best)

	Very similar	Similar	Neither similar nor different	Different	Very different
Age	○	○	○	○	○
Gender	○	○	○	○	○
Nationality	○	○	○	○	○
Educational program	○	○	○	○	○
Hobbies & Interests	○	○	○	○	○
Competencies & Skills	○	○	○	○	○
Values & Personalities	○	○	○	○	○

Q20 What are your expectations about your role in the team collaboration in this project week?
Please respond to the following 5 statements.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I expect to be a worthy member of my project team.	○	○	○	○	○
I am afraid I might not have much to offer to my project team.	○	○	○	○	○
I am confident that I can offer a valuable contribution to the project team.	○	○	○	○	○
I expect to be a cooperative team member.	○	○	○	○	○
I expect to work with a lot of self-confidence in my project team.	○	○	○	○	○

Q93 What are your **expectations** about how the team members will be included in the project this week?

In this team:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I expect that all team members will feel included.	○	○	○	○	○
I expect that some team members cannot be completely themselves.	○	○	○	○	○
I expect it will be difficult for some team members to fit in.	○	○	○	○	○
I expect everyone will be accepted for who they are.	○	○	○	○	○
I expect everyone can make a unique contribution.	○	○	○	○	○
I expect that differences between team members will be valued	○	○	○	○	○

End of questions

NON INTERVENTION GROUP goes to Q77

INTERVENTION GROUP.

Q90 You have now finished part one of this assignment.
In part two you will make a test and participate in an interactive assignment with your project team. In the test you will learn more about the type of roles and tasks you like as a technical student. In the interactive assignment you will discuss this with your teammates. The purpose is to stimulate fun and fruitful collaboration during this project. The team leader has all information and material that is necessary to do this assignment.

Q22 Complete the Professional Profile Test!
IMPORTANT: Do not close this window during the test!
To start the Professional Profile Test please take the following steps to download the Excel file: Click on 'Professional Profile Test',
Save the file that has been downloaded,
Open the file for further instructions.
Professional Profile Test

Q23 Insert your test scores!
What are the exact scores of your test?

1. Please fill in the scores with the test results from the **Professional Profile Test** (Excel sheet) below,
2. Do the same thing on your individual worksheet (**STEP 1: INDIVIDUAL WORKSHEET**, point 3)

- All-rounder _____

- Analyst _____

- Individualist _____

- Team player _____

- Innovator _____

Q77 Finish point 4 to 7 on your individual worksheet called STEP 1: INDIVIDUAL WORKSHEET. When you have finished the individual worksheet, please wait for your fellow group members to start part 2: the interactive group exercise.

Thank your for participating in the first part of this study! See you again with the next online questionnaire on Thursday. You will receive a free warm snack!

This is the end of the questionnaire!
To close this survey and save your responses, please click on the arrow button below.

(Note: now that you have filled out this questionnaire you have the right to withdraw your answers from further data analyses for this research).

Do you want more information about this?

- No, I want to close this questionnaire and save my responses (click the arrow button)

- Yes, I would more information about this

We want to draw your attention to the following: in line with the ethical code of conduct of the University of Twente, now that you have filled out this questionnaire you still have the right to withdraw your responses from this study. If you withdraw, your responses will be deleted from the database and excluded from any further data analyses.

Please indicate below if you give permission to use your responses for further research analyses.
- Yes, I **do** give permission (my answers can be used in this research)

- No, I **do not** give permission to use my responses for research analyses (Note that you are still required to participate in the next questionnaires, even though your data will not be used).

Appendix 2: Instructions

Non-intervention group

International Project Week

SAXION HOGESCHOOL

START THIS DIRECTLY AFTER COMPANY PRESENTATION

INSTRUCTIONS FOR INTRODUCTION TASK

Saxion LED and the University of Twente are working together to evaluate and further improve the project week. This year, we will evaluate how you experienced your collaboration in the teams.

Participation in the evaluation is a mandatory element of the project week.

What do you need to do?
All member (including the project leaders) give their input via short questionnaires:
- today: what are your expectations of the project week (see the link below)?
- on Thursday (before lunch): how was the collaboration (you will receive a link via email)?
- next week: what did you think of the whole project week?

What do you get from this?
- **after participation today: the team receives cake.**
- after participation on Thursday: you will receive a coin for a warm snack.
- if you completed all three questionnaires, you will have the chance of winning €100,-!
And… you will contribute to further improving the project week for next year. Perfect reason to participate right?

Start here

1. All team members (including the team leader), please start by filling in the first questionnaire individually on your laptop by using this URL: **https://bit.ly/2U88F7g**
At the end of the questionnaire, everyone receives a code. Write down the code of each team member. This serves as a proof that you completed this task.

2. Bring this paper **before 13:00h** to
- the Project Management Office (W2.39) or
- at Ariënsplein; go to the Arena.
Pick up your cake!

Do you need assistance? WhatsApp us at: +316 28 32 41 84 or come and find us at the Project Management Office (W2.39).

Team name:

Number of team members:
The codes:

Intervention group

LEARN MORE ABOUT EACH OTHER!
START THIS RIGHT AFTER COMPANY PRESENTATION

Before you start working on your company assignment, you will start working on this interactive task to find out how everyone can contribute to the team tasks. Why?
People differ: not only in terms of your study background, but also in terms of what you find important, your interests, your personality and your competences. Together this forms your professional profile. If you are familiar with your own professional profile and know about the professional profile of your team members, you will be able to make optimal use of each other's talents, collaborate well, have fun and come up with good and innovative solutions.

The task consists of three parts:
1. Learn more about yourself: all team members answer questions online and will find out about their own individual profile.
2. Learn more about your teammates: you will share your profiles and find out about the unique characteristics of your team and what you find important to work on as a group.
3. Prepare for the task: you will find out how the characteristics of everybody can be used during the project week.

You will need about 45 minutes for this task and then you are perfectly prepared for the project week!

Do you need assistance? Ask the teaching assistant for help or send us a Whatsapp message to: +316 28 32 41 84 with your room and group number or come and find us at the Project Management Office (W2.39). We will come to help you as soon as possible!

Participation in this task is a mandatory element of the project week. Saxion collaborated with the University of Twente to design and evaluate this interactive task. The outcomes will be used to further improve the project week for next years.

→ **Please use the material enclosed in this folder to start the task**

Appendix 3: Scoring format for each professional identity profile

Table 4

Dimensions, factors, items and scoring format for each profile.

Dimension	Factor	Item	Innovator	Analyst	Team player	All-rounder	Individualist
Interests	Social	I like meeting up with friends		-	+	+	-
		I like social activities		-	+	+	-
	Investigative	I like strategic games	+	+	-	+	-
		I like solving puzzles	+	+	-	+	-
Competence	Management	I am good at leadership and management	+	-		+	-
		I am good at networking	+	-		+	-
	Research	I am good at conducting research			-	+	-
		I am good at developing new research ideas			-	+	
	Analytical	I am good at developing solutions for complex problems	+	+	-	+	-
		I am good at thinking analytically	+	+	-	+	-
	Collaboration	I am good at team work				+	-
		I am good at collaborating with people outside my own study program.				+	-
	Flexibility	I am good at dealing at uncertainty	+	-		+	-
		I am good at adapting to new situations.	+	-		+	-
Values	Tradition	I find respect for tradition important	-	+	+	+	
		I find politeness important	-	+	+	+	
	Benevolence	I find a just world important	-	+		+	-
		I find ethical responsibility important	-	+		+	-
	Stimulation	I find lifelong learning important	+	+	-	+	-
		I find intellectual stimulation important	+	+	-	+	-
	Security	I find routine and structure important	-	+	+	+	+
		I find stability important	-	+	+	+	+
Personality	Extraverted	I am introverted	-	+	-	-	+
		I am reserved	-	+	-	-	+
	Open-minded	I am imaginative	+		-	+	-
		I am open-minded	+		-	+	-

Note. Above average (+), average (0) and below average (-)

Students scored the items by selecting below average, average or above average. These options were chosen based on the following statement: *"I identify myself with that item in comparison with other technical students."* When a student chooses below average for an item, it meant that he/she did not feel a fit for that particular item. If a student selected below average twice (1+1), the factor belonging to that item got two points. If the student selected one below average (1) and one average (2), that factor received three points. If a student selects two times above average (3+3), that factor receives six points. Consequently, a formula linked the score to the profiles based on the scoring format in the Table 4. For example, if question one and two (i.e. factor social) were answered with two times below average (1+1), the formula decided that the profiles analyst and individualist both receive one point according to the scoring format in Table 4. Eventually, the total score was multiplied with 26, and the result of that score was divided through a value that differs per profile (i.e. 20 for innovator, 24 for individualist, 18 for team player, 20 for analyst, 26 for all-rounder.

Appendix 4: Material intervention intervention group

LEARN MORE ABOUT EACH OTHER!
INSTRUCTIONS TEAM LEADER

START HERE!

STEP 1: Learn more about yourself

15 min.

You need this:

1. Individual worksheet (one per member)
2. 2 Profile boards (do not distribute yet)
3. Pen/pencil
4. Laptop

To do:

1. Distribute the individual worksheets and put the profile boards upside down on the table.
2. Let everyone work on the individual worksheet, including yourself!
3. Check if everybody has completed the personal profile card. Some people might by quicker than others, so be patient and give everybody the time needed to complete.

STEP 2: Learn more about your teammates

15 min.

You need this:

1. Team board
2. Pen/pencil

To do:

1. Write down the names of your teammates on the board.
2. Put the team number (e.g., DEMCON01) on the team board
3. Start left: ask every team member:
   - What profile did you select for yourself and why?
   - Did you change the original and why?
   - Which key characteristics – related to the profile – do you want to put on the team board?
4. Write down the key characteristics they want to put on the team board.
5. Count which profiles are most present. Write down the number in the upper right corner. Now discuss the following questions:
   - What profiles over- or underrepresented?
   - What does this mean for your project?
6. Discuss the characteristics that everybody wrote down:
   - What are the similarities?
   - What are unique characteristics?
   - Ask everybody to underline their most important characteristic on the board.

LEARN MORE ABOUT EACH OTHER!
INSTRUCTIONS TEAM LEADER

STEP 3: Prepare for the task

15 min.

You need this:

1. Team board
2. Pen/pencil
3. Post-its

To do:

1. Give each team member post-its.
2. Invite all team members to think about each task and how that fits them. They can indicate this by using post-its. You can also leave tasks empty if you do not have a clear preference.

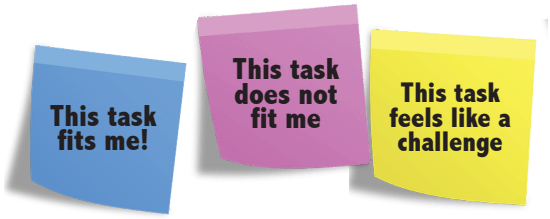
   Blue = this fits me! Write down one or two words what aspect of this task fits you.
   Challenge = this task is something I would like to be engaged in, but also want to learn from. Write down one or two words about what you want to learn.
   Pink = this does not fit me.

For example: if person X feels like designing fits their profile, than he/she should put a green post-it in their column and at the row of the report that indicates "designing lay-out".

3. Discuss the following questions based on the outcomes:
   - Are their more or less popular tasks?
   - How can team members help each other?
4. Fill in the last row of the table. Where are team members focusing on? What is their role during the project week?

One of the teaching assistants will come and take picture of your team board after you finished. This will serve as a proof that you completed this task. You can keep this board with you during the project week and make changes or add things if you want.

Enjoy the project week!



STEP 1. INDIVIDUAL WORKSHEET

1. Fill in this URL on your laptop:
https://bit.ly/2RUGdmC

2. Finish the survey. Do not forget to mention the results from the test in the online survey.

3. What are your results from the test? ⟶

My scores from the test

	All-rounder
	Analyst
	Individualist
	Team player
	Innovator

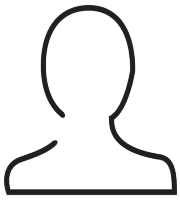
4. According to the test, the profile with the highest score fits you best.
Write down here your top 3: **1. ...** **2. ...** **3. ...**

5. Take one profile board from the pile. Read the profile description of the profile of your highest scoring profile. Underline the aspects that fit you well.
? Do you have the feeling that it does not fit you well? Read then the description of your number 2 (or if needed also 3). Make a decision which profile fits you best and indicate this on your personal profile card below.
Are there some words unfamiliar to you? For each group there is a Dutch translation available.

6. Now check the characteristics that you underlined and think of the project week and the things you are going to do. Pick 3-5 of these characteristics that you think are relevant for the project week. Write these down on your personal profile card.

7. The next step will be that you will be asked to introduce yourself, the profile you selected and your 3-5 characteristics to the rest of your team. But first wait till the rest of the team is finished with this part.

Personal Profile Card



Name:

This profile fits best

My 5 characteristics:

1.
2.
3.
4.
5.

PROFILE BOARD

People in the 'Innovator' profile typically enjoy **challenging** and **intellectually stimulating work**. They value having **good career perspectives**, which is likely to be more important than family relationships and adhering to traditions. Typically, they do not need predictability, preferring instead to **experiment** and seek out **challenges**. Volunteering and societal themes such as well-being and the natural environment are often of little importance to innovators.
Innovators are full of **initiative, creative in their thinking** and very **open to new ideas.** They tend to appear **optimistic, self-assured** and **assertive**. When collaborating with others, they may sometimes run ahead of the group in their enthusiasm. Therefore, ensuring to complete tasks and initiatives before starting new ones and keep everyone involved can be a learning point.
Innovators have a lot of **confidence** in their **competencies** when it comes to **entrepreneurship, collaboration** and **analyzing problems**. Designing systems or products and making the most of changes in the environments are also competencies that come easy to them. They tend to struggle to structure their work and organize their time efficiently.
In short, innovators like to understand how things work and are often interested in creative, artistic and innovative activities. They prefer to minimize screen time, spending their time working with their hands instead.

People in the 'Team-player' profile value **social etiquette** and having good **family relationships**. These values also tend to surface in their community spirit, interest in local communities and a desire to maintain a good **work-life balance**. Team players care about being in good health, they value **certainty** and appreciate a **comfortable life**. They are generally less interested in intellectual stimulation.
Team-players tend to be **socially pro-active**; they seek contact and touchpoints with others and during meetings they are active participants. They often have a **grounded and pragmatic view** on matters and are focused on **action** rather than analysis. Their outgoing nature helps to make connections between people when collaborating, however team-players may at times be too attention-seeking and benefit from allowing others more time to speak. While team-players like to take action, they may at times benefit from being more open to reflecting on creative ideas.
Team-players tend to be confident in their competencies regarding **managing other people**, and team **collaboration**. They evaluate their own analytical and research skills more negatively though. Also, designing systems or products and working in intercultural settings might me more difficult to them.
In short, team-players are interested in social interaction and the local communities they are part of. They prefer to act and get things done rather than analyze and think things through, which surfaces in their pragmatic approach.

People in the 'All-rounder' profile have many different motivational drivers. They value **intellectual challenges** and are keen to support other people and **contribute to society**. All-rounders like **to enjoy life**. They generally care about having good **family relationships**, their **health** and **career**, while to a lesser degree they also value predictability.
Many all-rounders seem curious and have a wide **variety of interests**. They tend to be open to **new ideas** and participate actively in conversations about these. Many all-rounders are well organized in their approach to work, which may help to satisfy their diverse motivational interests.
All-rounders have great confidence in their competencies. In particular skills such as **management, collaboration**, dealing with change and working in i**nternational environments** comes easy to them. They are also positive about their analytical abilities, their ability to design systems or products, to mentor others and to organize their own time for maximum effectiveness.
In short, all-rounders have broad interests encompassing people and society, collaboration with others and creativity. They tend to be curious and enjoy practical activities. This diversity of interests could make it difficult for some all-rounders to make decisions about what goals to pursue.

People in the 'Analyst' profile love **intellectual stimulation.** They are driven to **understand problems** and **find solutions**, in particular when this benefits other people and society. Analysts are often satisfied having a **modest** lifestyle without unnecessary luxuries. Most analysist are not interested in status or power; for them career success revolves around developing their **expertise** and solving increasingly **complex analytical issues**.
Most analysts appear **independent** and **introverted**; they tend to **listen** more than they talk. At times, this makes it hard for others to understand what thoughts analysts are having on their mind.
Analysts typically make a **friendly** and **reliable** impression. They tend to be somewhat sensitive to work pressure or may doubt the quality of their own work.
Analysts are generally confident in their **analytical skills**. They tend to believe in their abilities to conceptualize high quality research, execute the studies and write up the results. Analysts are significantly less confident in their competencies regarding management, collaboration, flexibility in times of change and the creative design of systems or products.
In short, analysts enjoy working independently on complex analytical issues. In their limited interaction with others, they are focused on the contents of their work and tasks at hand.

People in the 'Individualist' profile value a **comfortable** and **simple life**; they are not looking for challenges for their own sake. Individualists are most comfortable on their own and typically do not need much contact, interaction or activities with other people. **Gaming** is a favorite way to spend their free time and some individualists also enjoy **working with their hands**. Individualists tend to be less interested in topics concerning society.
In their work behavior, individualists may seem somewhat **unorganized**; they may wait for deadlines to come really close and work with bursts of action. When they are amongst others, they tend to **listen** rather than speak. When working on projects, it can be a challenge for individualists to stay actively involved with the team. They enjoy working on **practical matters**, appear **task-focused** and prefer for others to take the lead. Often, they make a **calm** impression on others, which can however also make them appear indifferent.
Individualist are quite **critical** when evaluating their own competencies. In particular when these competencies are related to interaction with other people, for example managing, collaborating with or mentoring others. Because many individualists prefer to be on their own and not pro-actively seek out challenges, they may not have practiced these competencies as often.
In short, many individualists like to work independently on clearly defined tasks. They tend to feel most comfortable with technical or functional tasks they can complete on their own.

TEAM ...

... X ... X ... X ... X ... X

My 5 characteristics: 1. 2. 3. 4. 5.	My 5 characteristics: 1. 2. 3. 4. 5.	My 5 characteristics: 1. 2. 3. 4. 5.	My 5 characteristics: 1. 2. 3. 4. 5.	My 5 characteristics: 1. 2. 3. 4. 5.	My 5 characteristics: 1. 2. 3. 4. 5.	My 5 characteristics: 1. 2. 3. 4. 5.	My 5 characteristics: 1. 2. 3. 4. 5.	**TASKS**
								Background research on problem / requirements
								Come up with innovative ideas and solutions
								Reporting findings on paper
								Presenting the findings & communication with client
								Designing the final products (solution / poster / report)
								Project management and team support
								WHAT IS YOUR ROLE DURING THE PROJECTWEEK?

Appendix 5: Questionnaire T2

Q1 Welcome back to the survey!
To be able to connect your answers of the questionnaires at three time points, we again need some information. Please fill out the following questions.

(Note: please give the same answers to the questions as you did in the previous questionnaire. Again we ensure that all personal information will be replaced by an anonymous number and removed from the data.)

Q2 **What is the name of your project team?**

(Select from the dropdown list, start with selecting the company name)
Company name (43)
Number (44)
Letter (45)

▼ Bronkhorst (1) ... Zeton BV ~ 3 ~ C (237)

Q3 **In what room does your project team work? My room number starts with...**

- ○ W0. (1)
- ○ W1. (2)
- ○ W2. (3)
- ○ W3. (4)
- ○ W4. (5)
- ○ S0. (6)
- ○ Z14. (7)
- ○ Z15. (8)

Q22 **How many team members did you know prior to the project week? (Select "0"if you did not know anyone before)**

- ○ 0 (1)
- ○ 1 (2)
- ○ 2 (3)
- ○ 3 (4)
- ○ 4 (5)
- ○ 5 (6)
- ○ 6 (7)
- ○ 7 (8)
- ○ 8 (9)

Q4 **What is your student number?**

Not a LED student at Saxion? Please fill in your group number + initials (For example, if your team number is Thales1A and your name is John Doe, type in here: Thales1AJD).

_____

Q13 **What is your email address?**
Please fill in the same email address as last time.

Your email address will only be used to send you the third questionnaire and inform you about the outcomes of the prize draw of €100,-.

Q5 **Are there any changes in the composition of your team since Monday? (click on all that apply)**

- ☐ Yes, we have a new team leader. (1)
- ☐ Yes, new team member(s) joined the group. (2)
- ☐ Yes, team member(s) left. (3)
- ☐ No, the team composition is still the same. (4)
- ☐ Other, namely (5) _____

Q23 **How would you rate the quality of your English language skills (speaking and understanding)?**

	Terrible (6)	Poor (7)	Average (8)	Good (9)	Excellent (10)
The quality of my English is...	○	○	○	○	○

Q33 **In what language / languages do you communicate with each other in your project group?**

- ○ Almost completely in English (1)
- ○ Mostly English, some Dutch (2)
- ○ English and Dutch equally (3)
- ○ Mostly Dutch, some English (4)
- ○ Almost completely in Dutch (5)
- ○ Other, namely (6) _____

Q6 To what extent do you feel **connected and committed** to your project team?

	Strongly disagree (15)	Somewhat disagree (16)	Neither agree nor disagree (17)	Somewhat agree (18)	Strongly agree (19)
I feel at home with my fellow team members. (2)	○	○	○	○	○
I try to contribute to a good working atmosphere in the team. (3)	○	○	○	○	○
This project team is important to me. (4)	○	○	○	○	○
I am happy with my project team. (6)	○	○	○	○	○
I feel connected to my project team. (7)	○	○	○	○	○
I am proud of my project team. (8)	○	○	○	○	○
I feel a strong sense of belonging to my team. (12)	○	○	○	○	○

Q7 Now that you have been working together in your project team for the past 4 days, we are **curious** to learn more about the collaborative process. *Please indicate to what extent you agree with the following statements about your project team:*

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
We regularly take time to figure out ways to improve our team's work processes. (1)	○	○	○	○	○
In this team, we share all relevant information and ideas we have. (2)	○	○	○	○	○
Members of this team ask each other for help and advice during the project work. (3)	○	○	○	○	○
If something is unclear, we ask each other questions. (4)	○	○	○	○	○
In this team, we make sure that we reflect on the team's work process regularly. (5)	○	○	○	○	○
In this team we ask critical questions when someone tells something new. (8)	○	○	○	○	○
In a discussion, our team views a topic from different angles and we share that with each other. (9)	○	○	○	○	○
When a team member has a different opinion during a discussion, he or she feels comfortable to voice this opinion. (11)	○	○	○	○	○
The team frequently seeks new information to make important improvements to our project. (12)	○	○	○	○	○
Team members go out and get all the information they possibly can from others, such as the	○	○	○	○	○

client, teachers or experts. (13)					
We invite people from outside the team to provide new information or have discussions with us. (14)	○	○	○	○	○

Q8 To what extent do you agree with the following statements about your **team**?

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
As a team, we have the confidence to perform well on the project. (1)	○	○	○	○	○
My project team believes it can achieve an excellent performance on the project. (2)	○	○	○	○	○
Achieving this team's goals is well within our reach. (3)	○	○	○	○	○
With focus and effort, this team can do anything we set out to accomplish. (4)	○	○	○	○	○

Q14 Now that the project week is almost finished, we are curious to learn about your **reflections on your role** in the team collaboration in this project week.

Please respond to the following 5 statements

	Strongly disagree (13)	Somewhat disagree (14)	Neither agree nor disagree (15)	Somewhat agree (16)	Strongly agree (17)
I feel like a worthy member of my project team. (2)	○	○	○	○	○
I am often afraid that I do not have much to offer to my project team. (3)	○	○	○	○	○
I am confident that I offer a valuable contribution to the project team. (4)	(	○	○	○	○
I feel like I am a cooperative team member. (5)	○	○	○	○	○
I work with a lot of self-confidence in my project team. (1)	○	○	○	○	○

Q16 What are your **reflections** about how the team members are included in the project assignment this week? ***In this team...***

	Strongly disagree (13)	Somewhat disagree (14)	Neither agree nor disagree (15)	Somewhat agree (16)	Strongly agree (17)
I think that all team members feel included. (1)	○	○	○	○	○
I think that some team members cannot be completely themselves. (2)	○	○	○	○	○
I think it is difficult for some team members to fit in. (3)	○	○	○	○	○
I think everyone is accepted for who they are. (4)	○	○	○	○	○
I think everyone makes a unique contribution. (5)	○	○	○	○	○

I think that differences between team members are valued. (6)	○	○	○	○	○

Q9 What is your role during this project?

○ Team member (1)

○ Team leader (2)

Skip To: Q11 If What is your role during this project? = Team leader

Q10 The following questions are about your team leader.

The team leader...

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
... provides us with the necessary support we need to progress (1)	○	○	○	○	○
... is available for consultation on problems (3)	○	○	○	○	○
... initiates moments to discuss the team's progress (2)	○	○	○	○	○
... motivates us to further improve our team work (8)	○	○	○	○	○
... is very much involved in our team (7)	○	○	○	○	○

Q11 In your opinion how well does your project **team perform**? Please grade your project team's performance on...

	Terrible (7)	Poor (8)	Average (9)	Good (10)	Excellent (11)
... accomplishing project goals (1)	○	○	○	○	○
... the quality of the project work (2)	○	○	○	○	○
... the quantity of the project work (3)	○	○	○	○	○
... the efficiency in collaborating (4)	○	○	○	○	○
... the overall performance level (5)	○	○	○	○	○
... the atmosphere in the team (6)	○	○	○	○	○
... the level of trust in the team (7)	○	○	○	○	○
... resolving disagreements (8)	○	○	○	○	○
... the effectiveness of communication (9)	○	○	○	○	○

End of Block

Start of Block: INTERVENTION GROUP

NON-INTERVENTION GROUP TO Q12.

Q24 On Monday morning your team was asked to participate in an **interactive group assignment** to learn to know your team members. You were invited to do a **Professional Profile Test** (in Excel) and to complete the team board. **Did you participate in this group assignment on Monday?**

- ○ Yes (1)
- ○ No (2)

Skip To: End of Survey If On Monday morning your team was asked to participate in an interactive group assignment to learn... = No

Q25 **Do you still remember what profile came out of your Professional Profile Test on Monday?**

- ○ Allrounder (1)
- ○ Analyst (2)
- ○ Individualist (3)
- ○ Innovator (4)
- ○ Team player (5)
- ○ No, I **do not** remember (6)

Q27 **How well did this profile fit you?**

This profile fits me...

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	
Not at all	○	○	○	○	○	Very much

Q28 **From how many other team members do you still remember their professional profile?**

- ○ 0 (1)
- ○ 1 (2)
- ○ 2 (3)
- ○ 3 (4)
- ○ 4 (5)
- ○ 5 (6)
- ○ 6 (7)
- ○ 7 (8)

Q29 1. How **seriously** did your **team** work on the **group assignment (the assignment with the team board)** after the Professional Profile Test from Monday?

My team worked on the team board...

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	
Not at all seriously	○	○	○	○	○	Very seriously

Q30 2. How **useful** was the **Professional Profile Test and the group assignment for the team collaboration** this week?

The Professional Profile Test and group assignment were...

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	
Not at all useful	○	○	○	○	○	Very useful

Q31 3. How **difficult** was the **Professional Profile Test?**

The Professional Profile Test was...

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	
Very difficult	○	○	○	○	○	Not at all difficult

Q32 4. How **difficult** was the **group assignment (the assignment with the team board)**?

The assignment with the team board was...

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	
Very difficult	○	○	○	○	○	Not at all difficult

End of Block: INTERVENTION GROUP

Start of Block: End

Q12 Thank you for answering these questions! As a thank you, you receive a warm snack! To pick up your snack, write down this **code: ${rand://int/10000:99999}** on the form.

Take all the codes to the **Project Managmenet Office (W2.39)**. There you will receive **green coins**. With those green coins you can pick up a **warm snack (croquette, frikandel, cheese soufflé or chicken corn)** between **11:00 - 15:00h** in the canteen! Enjoy!

This is the end of the questionnaire!
To close this survey and save your responses, please click on the arrow button below.

Appendix 6: Questionnaire T3

Q1 Welcome back to the last questionnaire to evaluate the International Project Week!

If you complete this questionnaire you have a **chance of winning €100,-!**
Furthermore, you contribute to further improving the project week.

To be able to connect your answers to those of the previous two questionnaires, we again need some information. Please fill out the following questions.

(Note: please give the same answers to the questions as you did in the previous questionnaires. Again we ensure that all personal information will be replaced by an anonymous number and removed from the data.)

Q2 **What is the name of your project team?**

Select from the dropdown list, start with selecting the company name.
Company name (7)
Number (8)
Letter (9)

▼ Bronkhorst (1) ... Zeton BV ~ I don't know ~ I don't know (436)

Q27 **What was your role during this project?**

- ○ Team member (1)
- ○ Team leader (2)

Q28 **I am...**

- ○ a Saxion Enschede student (1)
- ○ an international student who visited Saxion for the project week (3)
- ○ a havo-student who visited Saxion for the project week (2)

Skip To: Q3 If I am... = a havo-student who visited Saxion for the project week

Q31 **What is the name of your educational study program?**

- ☐ Applied Physics / Technische Natuurkunde (1)
- ☐ Chemical Technology / Chemische Technologie (2)
- ☐ Chemistry / Chemie (3)
- ☐ Electrical Engineering / Elektrotechniek (4)
- ☐ Industrial Product Design / Industrieel Product Ontwerp (5)
- ☐ Mechanical Engineering / Werktuigbouwkunde (7)
- ☐ Mechatronics / Mechatronica (8)
- ☐ Technical Business / Technische Bedrijfskunde (9)
- ☐ Technical Computer Science / Technische Informatica (10)
- ☐ Other, namely (11) _____

Q32 **Which study year are you currently in?**

- ○ 1 (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 or higher (5)

Q3 **What is your student number?** *Not a LED student at Saxion? Please fill in your group number + initials (For example, if your team number is Thales1A and your name is John Doe, type in here: Thales1AJD).*

_____

Q4 **What is your email address?**
Please use the same email address as last time.

Your email address will only be used to inform you about the outcomes of the prize draw of €100,-.

Q11 We are curious to learn about your **experiences** with the international project week.

Please indicate to what extent you agree with the following 6 statements (There are no right or wrong answers; click the one that fits you best)

	Strongly disagree (13)	Somewhat disagree (14)	Neither agree nor disagree (15)	Somewhat agree (16)	Strongly agree (17)
I enjoyed the project week. (1)	○	○	○	○	○
The project week was fun. (2)	○	○	○	○	○
I look back with a good feeling about the project week. (3)	○	○	○	○	○
The project assignment was very interesting. (4)	○	○	○	○	○
I was enthusiastic about the project assignment. (5)	○	○	○	○	○
I learned a lot during this project week. (6)	○	○	○	○	○

Q5 Now that the project week is finished, we are curious to learn about how your experiences have contributed to your development as a **technical professional**? *Please indicate to what extent you agree with the following 9 statements now that the project has ended.* ***After my experiences in the project week...***

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I definitely see myself becoming a technical professional in the future (1)	○	○	○	○	○
I am proud to become a technical professional. (2)	○	○	○	○	○
Becoming a technical professional has very little to do with how I see myself. (4)	○	○	○	○	○
It is important to me to become a good technical professional. (5)	○	○	○	○	○
I have confidence that my skills and interests will fit with being a technical professional. (6)	○	○	○	○	○
I know what type of technical professional I want to be. (7)	○	○	○	○	○
I have a clear idea on who I will be as a technical professional. (8)	○	○	○	○	○
I know what I need to do to become a technical professional. (9)	○	○	○	○	○
I am uncertain about the type of technical professional that I want to be. (10)	○	○	○	○	○

Q7 In the past week you've gotten to know your team members. What are your **impressions** of them now? To what extent do you perceive that the members in your project team are very similar or different from each other now?

Please indicate for the following 5 aspects how similar or different you perceive your team members to be (There are no right or wrong answers; click the one that fits you best)

	Very similar (1)	Similar (2)	Neither similar nor different (3)	Different (4)	Very different (5)
Age (1)	○	○	○	○	○
Gender (2)	○	○	○	○	○
Nationality (3)	○	○	○	○	○
Educational background (4)	○	○	○	○	○
Hobbies & Interests (5)	○	○	○	○	○
Competencies & Skills (6)	○	○	○	○	○
Values & Personalities (7)	○	○	○	○	○

Q8 **Do you want to have a chance in winning €100,-?**

Please leave your email address here:

Q9 Thank you for participating in your study! If you won €100,-, we will contact you as soon as possible.

This is the end of the questionnaire!
To close this survey and save your responses, please click on the arrow button below.