



MASTER THESIS

**TOWARDS A SOCIAL  
PROFESSIONAL  
LEARNING IN  
SCHOOLS : A STUDY ON  
SOCIAL PROFESSIONAL  
LEARNING OF  
VET-TEACHERS AND  
ITS INFLUENTIAL  
FACTORS**

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TRACK IN HUMAN RESOURCE DEVELOPMENT

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# Summary

In the past decades, due to the fast speed of social development all over the world like the rapid development of internet, the interaction between individuals became more convenient and fluent. Meanwhile, technological development has been accompanied by the emergence of more and more complex problems (within the needs of combining different fields of knowledge). This situation causes more challenge and difficulties to teachers' research study and classroom teaching, thus, traditional ways of teaching in education field have to be changed and adapted to a more cooperative and interdependent way. To cope with this situation, governments, school managers and professional researchers of education field all over the world have taken part in exploring organizational and psychological factors which will improve the educational systems by supporting students to strengthen their performance and teaching effectiveness. The focus is to investigate how teachers can cooperate effectively with each other in teams and improve their professional skills (expertise and practice). They need to learn how teachers can accomplish the multidisciplinary tasks with the help of each other by dividing tasks and settings and pursuing common goals. However, only few existing studies mentioned how teamwork factors especially task and goal interdependence will affect teachers professional learning. Therefore, the purpose of this study is to investigate the influence of task and goal interdependence on social learning activities that teachers are engaged in, including knowledge sharing and feedback asking. A correlation design is used to explore the relationship between the variables based on secondary data from 438 teachers from 6 Dutch VET colleges. The research findings show that task and goal interdependence have significant and positive impact on knowledge sharing and asking for feedback respectively. Moreover, the findings prove that the higher task and goal interdependence the teachers have, the more the teachers will be engaged in social learning activities. As a result, this study contributes to research on social professional learning by demonstrating the influence of teamwork related factors on improving teachers professional learning.

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# 1 Introduction

In the past decades, due to the fast speed of social development like the rapid development of internet, the interaction between individuals became more convenient and fluent. Meanwhile, technological development has been accompanied by the emergence of more and more complex problems (within the needs of combining different fields of knowledge). This situation causes more challenge and difficulties to teachers' research study and classroom teaching, thus, traditional ways of teaching in education field have to be changed and adapted to a more cooperative and interdependent way. Due to the continuously changing labor market, students have to change their learning method and need to strengthen their performance so that they can succeed in future career. To change this situation, governments, school managers, professional researchers of education field all over the world have taken part in exploring organizational and psychological factors which will improve the educational systems by supporting students to strengthen their performance. In Netherlands, most studies about this exploratory research have been conducted in primary schools and can not be applied to Vocational Education and Training (VET) colleges, the educational setting in which this study takes place. For example, VET colleges contains higher level of education. In addition, they have been merged into massive educational institutions. Those institutions have invited a lot of experienced professionals of different fields to teach students to facilitate the educational changes. To develop a better learning environment through encouraging independent, reliable, reflective, self-regulated, and social interactive learning, VET teachers and professionals are divided into multidisciplinary teams. Thus, teachers from different disciplines and different subjects have been asked to collaborate to teach multidisciplinary courses which may support students in strengthening their necessary competences to succeed in world's changing labor market. To achieve the common goal of strengthening students performance, the biggest problem for VET teachers is to learn how to cooperate effectively with each other in teams and improve their professional skills (expertise and practice). They need to learn to accomplish the multidisciplinary courses with the help of each other by dividing tasks and settings and realizing common goals.

According to the current changes in VET colleges, teaching in a multidisciplinary way requires VET teachers to learn, change and collaborate for their new collective curriculum. Previous research shows that it is not easy to change teachers' practice (Crow& Pounder, 2000; Fullan, 2002; Scribner, Sawyer, Watson, & Myers, 2007; Somech & Drach-Zahavy, 2007). In order to help individual teachers collaborate, the interrelations and interactions between teachers should be enhanced so that there will be more opportunities for them to communicate and interact with each other. Teachers from VET colleges in this study have been divided into interdisciplinary teams to stimulate teacher interactions and interdependence in their work (Meirink et al. 2009; Meirink et al. 2010; Truijen, 2012). In this way, they will work in teams or groups within shared goals and tasks that directly lead them to

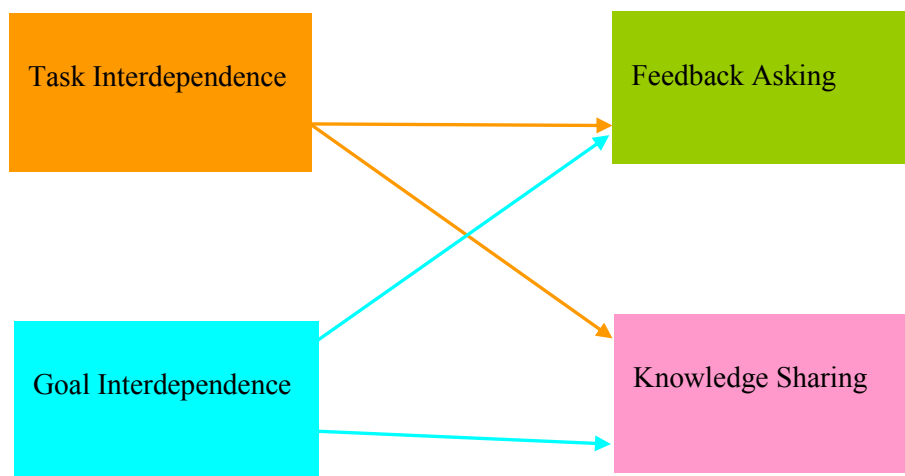
cooperate to achieve the expected targets. When the interactions between teachers being improved, collaboration will be facilitated and there will be more opportunities for teachers learning. However, due to teachers' individualistic nature of teaching and learning, they will feel uncomfortable when working in interdisciplinary teams. Therefore, it will not always increase the expected effects by working in teams (Meirink et al. 2009; Mueller et al. 2000; Slavin, 1990). Based on the context of VET colleges, in the past ten years, VET colleges have focused on the implementation of competence-oriented education. This requires teacher to combine new subject, theory and practice into existing or new courses (Ritzen, 2004). In this situation, it seems to be a good idea for teachers from different disciplinary teams to be successful in professional learning by building their capacity collaboratively (Hopkins & Reynolds, 2001; Parise & Spillane, 2010; Stoll, 2009; Toole & Louis, 2002). Studies have been conducted into professional learning communities, organizational learning, and schools to find out how to enhance school level capacity (Bryk et al. 1999; Leithwood and Louis, 1998; Silins et al. 2002; Stoll, 2009). Because the findings show that teamwork related factors (i.e., task and goal interdependence, teacher collaboration, participative decision making) play a critical role in affecting teacher learning, more research into how teamwork related factors (especially task interdependence and goal interdependence) affect teachers professional learning is needed.

Still, few studies into how teamwork factors especially task and goal interdependence will affect teachers professional learning have been conducted so far (Dionne et al. 2004). Completing tasks and attaining goals are necessarily needed for teachers to promote the interaction between them in achieving effective teamwork (Aritzeta & Balluerka, 2006). So more research needs to be done on the impact of teamwork on teachers' learning at school. Therefore, in this paper, we will specifically focus on how task and goal interdependence as important aspects of team work affect teachers professional learning.

While being interdependent, teachers in interdisciplinary teams may better solve problems and face the changes and challenges at work. So, information sharing and asking for feedback are complementary ways to survive in changing circumstances and learning environment. Both information sharing and feedback asking need interacting in a implicit way that requires not only more opportunities of cooperation but also building on others' opinions. By the interaction between teachers, teamwork may create potential opportunities for feedback asking, knowledge sharing, and of course learning. Therefore, task interdependence and goal interdependence may affect feedback asking and knowledge sharing; For those and other assumptions, there will be more detailed explanation and discussion in the theoretical part. The following research question guided our study: *To what extent do task and goal interdependence affect social professional learning activities(feedback asking and knowledge sharing)?*

## 2 Conceptual framework

The purpose of this study is to understand the influence task and goal interdependence have on social learning activities that teachers are engaged in, including knowledge sharing and feedback asking. Figure 1 displays the assumed relationships. According to the model, it is assumed that the higher task and goal interdependence the teachers have, the more the teachers will be engaged in social learning activities.



**Figure 1. Conceptual Framework of the associations between perceived task interdependence, goal interdependence and teachers' social learning activities(feedback asking and knowledge sharing)**

Based on previous research on teachers learning (Garet, Porter, Desimone, Birman, & Yoon, 2001; Runhaar, Sanders, & Yang, 2010; Supovitz, 2002), it is known that active professional learning affect teaching practice and student learning. Here we choose two social learning activities for our study, which are well-thought-out critical for promoting professional development and school improvement: asking for feedback and knowledge sharing (Korthagen et al, 2001; Kwakman, 2003; Lohman & Woolf, 2001; Smylie, 1995). Social learning refers to a process in which people learn by exchanging knowledge through collaboration (such as working in teams, learning from others, and contributing to learning of others) in a social context (Nonaka & Takeuchi, 1995; van Woerkom, 2004; Dede, 2010).

Asking for feedback is defined as inviting or advocating others for sharing the information, which specifically related to the task and process of learning or work, in order to bridge the gap between

what is understood and what is intended to be understood (Sadler, 1989). It is a social learning activity (van Woerkom, 2003) as it encourages a teacher to ask for opinions and advice from another teacher, a school leader, a student on his own teaching behavior or process. By asking for feedback, teachers can also gain new ideas, knowledge, capacities, different ways of teaching, and how to interact with others. Therefore, the one who gives the feedback should be implicit and explicit so that the feedback can be taken and used correctly (van Woerkom, 2004). However, there are still some problems for teachers to facilitate this, for example, asking for feedback means teachers have to expose themselves which may cause personal conflicts by judging others.

Knowledge sharing as a social learning activity, refers to the commitment of collaborative colleagues in informing and education each other, instead of keeping knowledge to themselves (Theodore, 2006). Knowledge sharing can be demonstrated as keeping the flow of information going in a team by any team members (van Woerkom, 2003). This requires not only ensuring knowledge clear, but also deciding the purpose and the way of using information. Based on existing studies, knowledge sharing can support the team to monitor its ongoing progress (Cochran-Smith and Lytle, 1999; van Woerkom, 2003). Because of this, knowledge sharing needs all teachers in the team to join the information 'flowing' process.

Previous studies have shown that for schools as professional communities, organizational factors such as cooperation, and participative decision making can promote teachers' learning at school (Kwakman, 2003; van Woerkom, 2004). As mentioned before, only few studies have been done concerning the role of teamwork in facilitating teachers' learning (Dionne et al. 2004). The findings suggest that both task and goal interdependence impact team members to communicate, cooperate, interact, and working under shared goals (Oude Groote Beverborg et al, 2015). Thereby, task and goal interdependence will promote collaboration and learning. Task interdependence refers to the degree of interaction between each team member necessarily to complete a task. If teachers feel more independent in helping team members complete their tasks, they are more motivated to exchange resource and knowledge with them (Cummings, 1978; de Jong, van der velt, & Molleman, 2007). This may also stimulate them to invite or advocate their colleagues for sharing information and thus asking for feedback, in order to bridge the gap between what is understood and what is intended to be understood (Sadler,1989).

In addition, task interdependence provides supportive conditions for the individuals such as shared practice and peer support in professional learning. By collaborating and communicating with colleagues, conflicts and rejects can be reduced, suspicions of individuals can be eliminated and active sharing knowledge will also be motivated. As a result, people who collaborate with their colleagues in learning may implement more sharing knowledge than those who work individually. According to these findings, here we derived the following two hypotheses: *task interdependence will positively affect feedback asking* (hypothesis 1), and *task interdependence will also have a positive impact on knowledge sharing* (hypothesis 2).



Goal interdependence refers to the degree of coordination required in pursuing their personal goals and the goals of the team (Deutsch, 1980; Weldon and Weingart, 1993). To teachers, goal interdependence represents that their own achievement and cost not only depends on their own goals but also the common goals of all team members (Runhaar et al., 2010). For teachers, setting a common goal may specifically indicate a course of action and thereby promote teachers in believing their abilities while reducing their feelings of incompetence and uncertainty (Staples & Webster, 2008). Thus, it will reduce the uncomfortable feeling of teachers when giving feedback to each other. Goal interdependence may motivate individuals to support the others by collaborating with them, it enables a lower task complexity and provides fewer threat to the learners to achieve a desired learning goals, which is also the aim of asking for feedback (Hattie & Timperley, 2007). So a common goal is needed for teachers to strengthen their interaction and collaboration (van der Vegt, & van de Vliert, 2002). The few available studies that have focused on the role goal interdependence can play for professional learning have shown that goal interdependence has positive effects on knowledge sharing, exchanging information, and open discussion (Runhaar et al., 2010; Tjosvold, 2008). Based on these findings, we come up with following hypothesis: *goal interdependence has a positive effect on feedback asking* (hypothesis 3), *and goal interdependence has a positive effect on knowledge sharing* (hypothesis 4).

## 3 Method

### 3.1 Design

In this study a correlation design is used to explore the relationship between the variables under study. We choose this correlation design firstly because it is used to describe the relationship between two or more naturally occurring variables. In this study, we are trying to study the relationship between 4 variables including task and goal interdependence, asking for feedback and knowledge sharing. Secondly, correlation design can support the use of data from a large number of respondents in this study (Dooley, 2001). Lastly, correlation design may provide a quantitative description of variables studied by studying a sample of teachers at one point in time. The data for this study were gathered as part of a PHD-study into the relationships between leadership, team interdependence, self-efficacy and teacher learning in Vocational Educational and Training (VET) colleges (Oude Groote Beverborg et al, 2015). In this study a secondary analysis is conducted on a subset of these data. The design of the study makes it possible to examine the relationships between team interdependence and social learning activities of teachers and compare the findings with results of other cross-sectional studies conducted.

## 3.2 Sample

The data collection for this study was conducted at different multidisciplinary teams from different departments (i.e., Education, Technology, Health and Welfare, Economics and Business) of six VET colleges. In these multidisciplinary teams, teachers with different specializations worked together to prepare students for their future professions. To obtain a large sample, convenience sampling was used. Teachers were asked to fill out a questionnaire, using the online program survey-monkey. The questionnaires were sent to 853 teachers of 67 teams. Of the 67 teams, the largest team had 25 teachers while the smallest only had 4 teachers.

In one of the six VET colleges, 14 teachers did not work in a multidisciplinary team and therefore are not included in the analysis. Among the 67 teams, teachers from one team did not respond to the questionnaire which means that only 66 teams were used for the data analysis. For the original study, 447 of the 853 teachers who received the questionnaires completed the whole questionnaire. Of these 447 teachers, 438 have completed that part of the questionnaire used for this study (20 items)

Among the 438 participated teachers, 66% of the teachers who took part in this study were men. The youngest teacher who participated in this study was 22, and the oldest was 62 (Mean = 48 years old). About 71% of the teachers had a bachelor degree, while 16% had a master degree, the remaining 12% had finished secondary education. 30% of the teachers who participated in this study were experienced teachers that had worked as a teacher over 20 years. Meanwhile, 18% of the teachers had been a teacher for more than 10 years, while a limited number of them had just begun their teaching career (4%).

## 3.3 Instruments

### 3.3.1 Questionnaire

This study is part of a larger research on the impact of leadership, team work and self-efficacy on teacher learning in VET colleges. For the original study (Oude Grootte Beverborg, Slegers & Van Veen, 2015), a questionnaire, including more than 60 questions across 11 scales, was used to gather the data (See Appendix 1). The questionnaire consists of two parts. Questionnaire A focused on describing the background variables of the participants, e.g., gender, educational background, time of working as a teacher, and so on. Questionnaire B is the main questionnaire and concentrates on the key concepts of the original study. As this study focuses on a selection of the variables (4 variables) of the original study, only the questions measuring task interdependence, goal interdependence, knowledge sharing and feedback asking were used for the data-analysis.

The variables in this study were measured by existing, well validated scales on task interdependence and goal interdependence (Runhaar et al., 2010; Vegt et al., 2000), feedback asking and information sharing (Runhaar et al., 2010; Van Woerkom., 2003). Based on the original questionnaire, 4 items measured Task Interdependence (e.g., For the conduct of our jobs, the members of my team need information from each other), 4 items measured Goal Interdependence (e.g., If team members reach their goals, it becomes easier for other team members to reach their goals), Social professional learning activities consists of 12 items in total, among which, 5 items measured Knowledge Sharing (e.g., I discuss problems encountered in my teaching practice with others in order to learn from their responses), and 7 items measured Feedback Asking (e.g., If I think that I have not done my work well, I discuss this with my team members). In addition, all 20 items measuring the four concepts of this study were scored on a 5-point likert- scale (1 = strongly disagree, 2 = partially disagree, 3 = do not disagree, do not agree, 4 = partially agree, 5 = strongly agree). As all the items were formulated positively, recoding items before conducting further analysis was not needed.

### 3.3.2 Validity of instrument

An exploratory factor analysis using principal component analysis (PCA) and oblique rotation (promax) was used to assess the construct validity of the dependent variables (asking for feedback and information sharing). Before applying PCA, the suitability of factor analysis for the data of these variables (total of 12 items) was analyzed. First of all, the Kaiser-Meyer-Olkin (assessing the sampling adequacy for each item) appeared to be .86 and much higher than the commonly suggested and acceptable value .5 (Field, 2000), indicating that the sampling is adequate and the patterns of correlations are fairly compact. Secondly, the Bartlett's test of sphericity (used for testing a null hypothesis that correlation matrix is an identity matrix) was significant ( $\chi^2(66) = 2238.604, p < .001$ ) and the null hypothesis is thus rejected. This indicates that correlations between variables significantly differ from zero (Field, 2000). In other words, the correlation matrix significantly differs from an identity matrix. Thus, it means that relationships among the variables that we expect to analyze in the study do exist and factor analysis is therefore appropriate. Lastly, the results of anti-image correlation matrix (also measuring sampling adequacy for all items by presenting the negatives of partial correlations) are all above the acceptable value 0.5 (Field, 2000), indicating that the matrix should be suitable for factor analysis. All these indicators suggest that the 12 items measuring teachers' engagement in social learning activities are suitable for conducting factor analysis.

Findings from the PCA analysis with oblique rotation showed that the first 2 factors' eigenvalues are above 1 and explained the 54% of the total variance. The factor loading of pattern matrix showed that the 8 items in component 1 were describing knowledge sharing between colleagues. The findings also showed that the 3 items loaded on component 2 and refer to describing asking for feedback from the team members and leaders. One item (Feedback 61), however, loaded on both component 1 and component 2. Therefore, this item was removed for further analysis. In addition, 3 items measuring asking for feedback, although not expected, loaded on the first component (knowledge sharing) of the pattern matrix (Feedback 511, Feedback 521, Feedback 71). Feedback 511 (If I think that I have not

done my work well, I discuss this with my team members) can be seen as a way of sharing my failed teaching experience with colleagues. They can share their successful experience with me while avoid the same failure. Feedback 521 (I regularly ask my team members for feedback) shows that when someone ask for feedback from others, it is actually getting others' experience or knowledge to solve this problem which is more likely to be knowledge sharing. Feedback 71 (I use the reactions of students to improve my teaching) can be seen as a way of knowledge sharing that teachers gain useful information from students to revise their teaching, which may eventually be shared with students to improve their learning. Therefore, these 3 items were included as part of the knowledge sharing component. As a result, only one items was removed for further analysis. Finally, a new PCA analysis with oblique rotation was conducted on the remaining 11 items.

The findings clearly showed that all the items which loaded on component 1 demonstrated the meaning of knowledge sharing; similarly, component 2 could be labeled as asking for feedback. For the findings of the PCA analyses, see Appendix 2 -Table1.

To assess the construct validity of the two dimensions measuring perceived team interdependence (task and goal interdependence, 8 items), a PCA analysis with oblimin rotation was conducted. First, the Kaiser-Meyer-Olkin (KMO-test), Bartlett's test of sphericity and anti-image correlation matrix were examined to explore the suitability of the data for factor analysis. The Kaiser-Meyer-Olkin (measuring sampling adequacy for each item) appeared to be .76 and thus higher than the commonly suggested and acceptable value .5, indicating that the sampling is adequate and the patterns of correlations are fairly compact for factor analysis (Field, 2000). The Bartlett's test of sphericity (testing a null hypothesis that correlation matrix is an Identity matrix) appeared to be significant ( $\chi^2(28) = 1251.885$ ,  $p < .001$ ), and the null hypothesis is rejected. This indicates that correlations between variables significantly differ from zero and the correlation matrix significantly differs from an identity matrix (Field, 2000). Thus, factor analysis is appropriate for this study as the Bartlett's test of sphericity suggests there exists some relationships among the variables to be studied. Lastly, the results of anti-image correlation matrix showed that all values to be above the acceptable 0.5 (Field, 2000), indicating that the matrix should be suitable for factor analysis. Findings from the results showed that the first 2 factors' eigenvalues are above 1 and can be distinguished.

The findings from the PCA analysis with oblimin rotation showed that two components had an eigen value above 1 and explained 61% of the total variance (39% and 23% respectively), while the other factors only explained (less) 10% of variance. The 4 items (out of 8 items) measuring task interdependence had factor loadings higher than 0.6 on component 1. One item measuring goal interdependence (Goal 11) also loaded highly on component 1. This item (If team members reach their goals, it becomes easier for other team members to reach their goals) does not indicate that if all the team members have common goals as goal interdependence. However, if under same tasks, all the team members will set their goals within the same tasks. Therefore, item Goal 11 should be transferred from component 2 to component 1. In addition, 3 of the 4 items measuring goal interdependence,

loaded highly on component 2. This factor loading matrix showed a well-defined structure of factors as all the items have fairly high factor loadings of at least 0.6 and no cross-loadings.

A new PCA analysis with oblique rotation was conducted on the 8 items. The findings clearly showed that all the items which loaded on component 1 demonstrated task interdependence; similarly, component 2 could be labeled as goal interdependence (Appendix 2 -Table2).

### **3.3.3 Reliability analysis**

To assess the internal consistency of the components extracted from factor analysis, items analysis were conducted to calculate Cronbach's alpha. Based on Field(2009), a questionnaire with  $\alpha$  of or above 0.8 is suggested to be good and reliable. The findings showed that reliability of the variables were good to satisfactory: knowledge sharing ( $\alpha=.87$ ); task interdependence ( $\alpha=.80$ ); goal interdependence ( $\alpha=.77$ ), and asking feedback ( $\alpha=.74$ ). Based on these findings, scales were constructed by averaging all the items of each variable.

### **3.3.4 Data analysis**

To test the hypothesis of this study, first descriptive analysis is carried out to describe the extent to which teachers are engaged in social professional learning activities and their perceptions of task and goal interdependence. In addition, the associations between the dependent variables and independent variables are examined by using bivariate correlation analyses. However, the bivariate correlation analysis only determines which two variables are associated but do not demonstrate how one factor influences the other. To examine the relationships between the independent variables(task and goal interdependence) on the one hand and the dependent variables (asking for feedback and knowledge sharing) on the other, regression analyses are conducted. The two independent variables are regressed on each of the two dependent variables of professional learning (asking for feedback and knowledge sharing).

## **4 Findings**

Table 1 reports the mean scores and standard deviations of all the study variables. The findings shows that the teachers participating in this study have a relatively higher mean score for knowledge sharing ( $M = 3.85$ ,  $Std = .62$ ) than for asking for feedback ( $M = 2.90$ ,  $Std = .93$ ). It turns out that those

participants feel that they carry out knowledge sharing mostly, while they are least involved in asking for feedback for their professional learning. At the same time, Table 1 also reports the mean score and standard deviations of task interdependence and goal interdependence. The findings show that the participated teachers have a relatively higher mean score for task interdependence ( $M = 4.33$ ,  $Std = .54$ ) than for goal interdependence ( $M = 3.11$ ,  $Std = .91$ ). This clearly indicates that the participated teachers thought that they are more willing to implement task interdependence than goal interdependence. The standard deviations (Std) of all scales range from .54 to .93, which indicate a relatively high degree on homogeneity between teachers participating in the study.

**Table 1**

*Means scores and standard deviations for variables under study (N=438 )*

<b>Variables</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Asking for feedback	438	2.90	.93
Knowledge sharing	438	3.85	.62
Task interdependence	438	4.33	.54
Goal interdependence	438	3.11	.91

Note: Rating scale: 1 = strongly disagree, 2 = partially disagree, 3 = do not disagree, do not agree, 4 = partially agree, 5 = strongly agree.

Bivariate correlation analysis shows that all variables were significantly correlated with each other (see Table 2). The highest correlation is found between asking for feedback and sharing knowledge ( $r=.49$ ,  $p<.01$ ), while the association between task interdependence and goal interdependence appears to be less strong ( $r=.202$   $p<.01$ ). Additionally, there are also some significant correlations between independent variables and dependent variables: task interdependence is significantly correlated with sharing knowledge and asking for feedback; goal interdependence is also significantly correlated with both sharing knowledge and asking for feedback.

**Table 2***Pearsons correlations of the variables under study*

<b>Variable</b>	2. Asking for feedback	3. Task interdependence	4. Goal interdependence
1. Knowledge sharing	.490**	.432**	.367**
2. Asking for feedback		.230**	.309**
3. Task interdependence			.202**
4. Goal interdependence			

Note. \*\*. $p < .01$ 

The first multiple regression analysis (method enter) was conducted with the dependent variable knowledge sharing and both independent variables (task and goal interdependence) as predictors. In Table 3 the results of this analysis are summarized. The findings show that the two independent variables account for 26.8 percent of the variance in knowledge sharing ( $F(2,437) = 79.73$ ,  $0 p < .01$ ). In addition, based on the significant standardized regression coefficients (Beta), task interdependence seems to affect knowledge sharing ( $\beta = .37$ ;  $p < .01$ ) relatively more than goal interdependence ( $\beta = .29$ ;  $p < .01$ ) does. In general, it means that if teachers perceive that they are more task and goal interdependence, they will be more engaged in sharing knowledge as a social professional learning activity.

**Table 3**

*Results from the regression analysis with sharing knowledge as dependent variable (N=438)*

Independent variable	B	Std. error	Beta	t	Sig T
Task interdependence	.427	.048	.374	8.922**	.000
Goal interdependence	.199	.029	.291	6.948**	.000

Note. R square = .268; \*\*. $p < .01$

Table 4 reports the results of the regression analysis (method=enter) with asking feedback as dependent variable and task and goal interdependence as predictor. The findings show that the two variables account for 12.5 percent of the variance in asking for feedback ( $F(2,437) = 30.97$ ,  $p < .01$ ). Additionally, both task interdependence ( $\beta = .17$ ;  $p < .001$ ), and goal interdependence ( $\beta = .27$ ;  $p < .01$ ) have a significant positive impact on asking for feedback, although the relatively impact of task and goal interdependence seem to differ compared to the case of knowledge sharing. Goal interdependence has a relatively stronger effect than task interdependence. Moreover, the difference between task and goal interdependence seems to be a little bit greater than in the case of knowledge sharing. In general, the results indicate that the more teachers perceive that they are task interdependence and goal interdependence, the more they are engaged in asking for feedback.

**Table 4**

*Results from the regression analysis with asking for feedback as dependent variable (N=438)*

Independent variable	B	Std. error	Beta	t	Sig T
Task interdependence	.299	.079	.174	3.804**	.000
Goal interdependence	.281	.047	.274	5.978**	.000

Note. R square = .125; \*\*. $p < .01$



## 5 Limitations and further study

With the help of the findings of this study, progress has been made in answering the research question: *To what extent do task and goal interdependence affect social professional learning activities (feedback asking and knowledge sharing)?* However, there are still some limitations of this study. First of all, the two factors task interdependence and goal interdependence only explained a small percentage of variance for social learning activities. This means that there must be other influential factors of social learning activities. Thus, those other factors which may also have significant and positive impact on social learning activities for professional learning need to be further investigated, for example: learning climate, collaboration of colleagues, etc. Previous research (Eraut, 2004) suggests that professional learning can be facilitated by the learning climate where individuals work and learn. In the meantime, collaboration of colleagues may also have a positive impact on individual's professional learning as collaboration of colleagues can provide individuals opportunities to participate in team discussions for brainstorming in solutions (Totten, Sills, Digby, & Russ, 1991). Therefore, if time and energy permitted, the future studies could further investigate some other influencing factors (e.g., learning climate and collaboration of colleagues) of professional learning. Secondly, there is also significant correlation between the two independent variables: task and goal interdependence. It suggests that the two influential factors may significantly influence each other as well. However, it was not studied in this research. Thus, further research may focus on how the two influential factors can influence each other to stimulate teacher implementation of professional learning. In addition, this study is cross-sectional by nature, but only regression analysis was used to test the model; therefore, other methods or analyses could also be employed to further investigate the hypotheses if time and energy permitted, for example conjoint analysis can be conducted in further study to test participants' potential attitudes towards their choice in the questionnaire, which will further prove the relationships between variables used in this study.

## 6 Discussion and Conclusion

This paper aimed to study to what extent do task and goal interdependence affect teachers' social professional learning activities (feedback asking and knowledge sharing) in VET colleges. In order to answer this research question, data from 438 teachers from 6 VET colleges has been used for this study. A correlation design has been chosen to explore the relationship between the variables of this study.

With regard to the first and second hypotheses, the findings of this study suggest that task interdependence has a positive influence on feedback asking and sharing knowledge respectively; with regard to the third and fourth hypotheses, the findings of this study suggest that goal interdependence also has a positive influence on feedback asking and sharing knowledge respectively.

Findings from multiple regression analysis point out that both the two independent variables (task interdependence and goal interdependence) have positive effect on knowledge sharing. Unexpectedly, between the two independent variables, task interdependence has a relatively higher impact on knowledge sharing than goal interdependence. On the contrary, goal interdependence seems to have a relatively higher effect on asking for feedback than task interdependence. From all those findings above, it implies that the more teacher perceive and apply task interdependence and goal interdependence with their team members, the more they will implement knowledge sharing and asking for feedback for their professional learning. Besides, it also implies that task interdependence has a higher degree in influencing knowledge sharing while goal interdependence has more influence on asking for feedback. Finally, the findings of this study show the same results as the intended theoretical framework.

Based on the findings of a previous study (Oude Groote Beverborg et al, 2015), both task interdependence and goal interdependence facilitate teachers social learning activities or interactions. Meanwhile it stated that task interdependence and goal interdependence have different purpose: task interdependence is more related to the collaboration of team members to complete their tasks, while goal interdependence is related to the required collaboration in achieving the common goal of a team. As described before, teachers not only in the VET colleges but also in general, have a high level autonomy in classroom teaching, due to the traditional courses which require them to teach individually through classroom teaching. Usually the main task of them is to individually manage the classrooms and teach their students. In this situation, a common goal is needed for teachers not only to successfully complete their classroom teaching but also to have more opportunities to interact with their colleagues to facilitate the expected education target of school. Thus, the higher task and goal interdependence the teachers have, the more they will engage in social learning activities (sharing knowledge, providing feedback, etc) to improve their teaching performance. Findings of this paper also have proved the discussion of Oude Groote Beverborg et al (2015) that the degrees of impact to social learning activities by task and goal interdependence are different. However, from previous studies, it only stated that the different purpose of task and goal interdependence may be the cause of the different influential on teachers' facilitation in social learning activities. In this study, findings and results have further proved that task interdependence and goal interdependence each has its own focuses on teachers motivation of interaction or engagement in social learning activities.

The findings not only confirmed the hypotheses of this study, but also have profound significance for teacher professional learning at individual, team and school levels. From the results and findings of this study, it may be derived that although it has been doubted before if teachers will easily accept task

and goal interdependence, fortunately, the results suggest that teachers do accept teamwork and are willing to participate in. For individual level, a teacher with higher task interdependence and goal interdependence can do better in improving his professional learning on one hand, also he will have a better insight on the effect of teamwork which his students may benefit from. For team level, teachers' success requires not only the hard working or learning by someone himself, but also needs the help and collaboration from colleagues, team members or school leaders. For school level, if most teachers have high level task and goal interdependence, the connection between teachers will be more closed as a whole that the school tasks and goals are easier to be achieved. Task interdependence and goal interdependence are not that easy to be accomplished, it needs teacher's accept, supervisor's guidance and school board's support. But they are still necessary in promoting teachers' professional learning which is why we should keep on developing them.

With the development of school education and the changing requirement of world's labor market, it is important for school teachers to help student improve themselves to face the opportunities and challenges in future. Studies on professional learning become more important and necessary for teachers to be more qualified in teaching and able to improve students' performance. However, teachers sometimes feel weak in implementing and improving their professional learning. This study tries to provide some suggestions for trainers and practitioners of Human Resource Development (HRD) to improve school teachers' professional learning. First of all, the results of this study show that teachers actually are interested in becoming engaged in knowledge sharing and asking for feedback. Thus when making HRD policies and teaching schedule, it should be considered to provide support in promoting teachers' engagement in knowledge sharing and asking for feedback. Secondly, the results of this study also indicate that teachers who have higher task interdependence and goal interdependence, they will engage more in social learning activities. It shows a way for HRD practitioners in designing program for teachers professional learning, which is making changes at school level. HRD practitioners should work with school leaders when setting school tasks for the next academic year. The tasks should be designed to support teachers implementation of task interdependence under educational requirement, for example, set some new multidisciplinary courses. Meanwhile it is also important for HRD practitioners and school leaders to guide teachers following a common goal(goal of school) which may lead the teachers higher goal interdependence. In general, HRD practitioners and school leaders should keep in mind that it is necessary to promote teachers task and goal interdependence that will help improve their professional learning, and then lead to better students' performance.

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# Appendix 1

## Questionnaire for the survey

### Time working

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How long have you been working in this function?

---

- 1) less than half a year
  - 2) half a year
  - 3) 1 year
  - 4) 2 years
  - 5) 5 years
  - 6) 10 years
  - 7) 20 years
  - 8) more than 20 years
- 

### Education

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What is your highest education level?

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- 1) Secondary Vocational Education
  - 2) Higher Vocational Education
  - 3) University
- 

### Gender

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What is your gender?

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- 1) male
  - 2) female
- 

The following scales were responded to as follows: (1) disagree much, (2) partially disagree, (3) do not disagree, do not agree, (4) partially agree, (5) agree much.

### *Task interdependence*

- 
- 
- 1) For the conduct of our jobs, the members of my team need information from each other
  - 2) To do our jobs well, we have to work together as a team
  - 3) The work of one team member influences the conduct of the tasks of other team members
  - 4) To do our work well, we have to coordinate our work as a team
- 

#### *Goal interdependence*

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- 
- 1) If team members reach their goals, it becomes easier for other team members to reach their goals
  - 2) In our team we all want to reach the same
  - 3) We agree on what quality is for our team
  - 4) If work does not satisfy quality requirements, the responsible team member is asked about this by other team members
- 

#### *Knowledge sharing*

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- 
- 1) I regularly share knowledge and experiences with team members
  - 2) I discuss what I find important in my work with team members
  - 3) I discuss our criteria for good functioning with team members
  - 4) I discuss problems encountered in my teaching practice with others in order to learn from their responses
  - 5) I discuss how I have developed with my team members
- 

#### *Feedback asking*

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- 
- 1) If I think that I have not done my work well, I discuss this with my team members
  - 2) I regularly ask my team members for feedback
  - 3) I visit team members' classes to learn from educational practice
  - 4) When I think I did my work poorly, I talk with my leader about that
  - 5) I regularly ask my leader for feedback
  - 6) I ask my students about what they think of my way of teaching
  - 7) I use the reactions of students to improve my teaching
-



## Appendix 2: Tables of Factor Analysis

**Table 1**

*Obliquely (promax) rotated component loadings for social professional learning activity items\**

Item	component	
	1	2
Knowledge sharing 21	.858	
Knowledge sahring 11	.809	
Knowledge sahring 41	.808	
Knowledge sahring 31	.799	
Asking for feedback 511	.642	
Knowledge sahring 51	.631	
Asking for feedback 521	.595	
Asking for feedback 71	.446	
Asking for feedback 551		.888
Asking for feedback 541		.870

Asking for feedback 531		.498
Eigenvalues	5.109	1.421
Percentage of total variance	42.579	11.844
Number of test items	8	3

\*Loadings > .30 The items are represented by their item numbers

**Table 2**

*Obliquely (promax) rotated component loadings for team interdependence items\**

Item	component	
	1	2
Task 41	.875	
Task 21	.822	
Task 11	.803	
Task 31	.799	
Goal 11	.648	
Goal 31		.880

Goal 21		.812
Goal 41		.776
Eigenvalues	3.143	1.850
Percentage of total variance	39.285	23.125
Number of test items	5	3

\*Loadings >.30 The items are represented by their item numbers