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Self-Directed Learning Readiness in Virtual Teams

Abstract

This study presents a research design, which provides a summary on the literature of virtual teams and Self-Directed Learning (SDL) and explains data collection and analytical approach of research focusing on how Self-Directed Learning Readiness Scales (SDLRS) can be applied in virtual teams. The planned research focuses on whether the SDLRS results in virtual teams will be similar to results in nursing education, where these scales were mostly tested. Furthermore, it will also test the assumption that members of virtual teams will score higher than participants from previous studies. The chosen SDLRS questionnaire was developed initially in 2001 and has since been tested and verified as part of the planned research. This paper gives an overview on the space, timing and methodological specifications regarding the data collection and covers the confirmatory factor analysis and descriptive statistics that will be used to analyse the data.

Keywords: learning, Self-Directed Learning, virtual teams

JEL classification: D83, M14, M16, M53

INTRODUCTION

Globalisation and the rapid innovation over the past decades significantly changed the way teams work, perform tasks and develop their skills and knowledge. Technology slowly started to take over workplaces, starting from phones and emails to instant messaging solutions, videoconferencing and online collaboration tools. Nowadays almost every team is virtual in its operations, since they use emails, software or other information and communication technology tools to perform their daily tasks. The deciding factor whether teams are virtual is whether they work from various locations and if they almost solely rely on technologies during their collaborations.

Previous summaries on virtual teams (Lipnack–Stamps, 2000; Bell–Kozlowsi, 2002; Berry, 2011) provided general theoretical background and more current studies (Hoch–Kozlowski, 2014; Dulebohn–Hoch, 2017; Larson–DeChurch, 2020) analysed the leadership aspects of virtual teams, highlighting team development as one of the crucial areas in virtual teams. The study prepared by the author of this article (Kupa, 2020) provided a critical literature review of virtual teams and their leadership aspects and identified that there is a gap in virtual teams' litera-

ture regarding learning strategies, which led to further research in the academic literature in learning and individuality.

Virtual teams have their own benefits and challenges, which are also relevant when it comes to developing a team or individuals, improving skills, gathering knowledge or sharing existing information within team. Virtual teams heavily rely on online learning and platforms but have challenges in regard to learning techniques that are more interpersonal and are based on trust such as mentoring or coaching. Virtual nature also brings forward several issues regarding classroom settings, such as time-differences, language barriers and the proactivity and self-directedness of the learners has become evident in virtual teams as well.

When someone works from home, moreover, starts working in a new team or organisation from another location without the opportunity to meet face-to-face, their learning strategy becomes the key to their success. Whether these individuals possess the necessary skills, personality traits and motivation to be the owner of their own learning path – i.e., they are ready to self-direct their learning – can be measured through Self-Directed Learning (SDL) readiness scales, such as the ones developed by Guglielmino (1997) or Fisher et al. (2001). The common feature of these scales is that they consist of several statements that have to be evaluated on a Likert-scale, where the highest score means higher readiness for individuality in the learning path.

This paper summarises the methodology that is required to test, whether the scale of Self-Directed Learning Readiness (SDLR) as defined by Fisher et al. (2001) measured in nursing education is suitable to measure SDLR in virtual teams. This test has been done through circulating the questionnaire of Fisher et al to workers in virtual teams in Hungary and the data collected will be analysed using confirmatory factor analysis. After this analysis the hypothesis that the SDLR score of virtual teams is higher than in traditional school settings will be tested with descriptive statistics.

Section 2 of this paper provides an excerpt on the critical literature review performed on virtual teams and SDL literature. Section 3 gives an overview of the research method, approach, data collection and analysis to be executed. Section 4 gives a conclusion.

1. CRITICAL LITERATURE REVIEW

1.1. VIRTUAL TEAMS

The concept of virtual teams originates from the 1990s, where their benefits and description were in the focus of several studies (Byrne et al., 1993; Dess et al., 1995). Virtual teams have the same basic concept as traditional teams: they are a set of individuals sharing the responsibility to perform tasks as a complete social entity.

Team members have to work together using their different skills and providing support to other members to reach their common goal (Ricketts–Ricketts, 2010). Virtual teams differ from traditional teams in that they have the ability to work together using IT and communication technologies while the team members are located in different locations and face-to-face meetings are not necessary in executing their tasks (Bell–Kozlowski, 2002). The goals and tasks of virtual teams do not necessarily differ from traditional teams; the basic difference is technology and physical non-proximity of the team members. The technology-mediated nature of virtual teams is present in several studies, noting that without technology teams cannot have a virtual nature (Lipnack–Stamps, 2000).

The virtual nature itself is a complex and multidimensional construct (Kupa, 2020), even if two teams use the same tools and technologies, the extent to which these are used is the deciding factor in qualifying as virtual teams. Every team that uses technology to a certain extent has a virtual nature in their operations; however a team, which uses email, but their daily operations are conducted face-to-face in the same office is not a virtual team, only a team conducting certain activities virtually. This means, that using technology does not automatically mean that a team is virtual – the geographical dispersion of members and the technology mediated nature both need to be present to qualifying as a virtual team (Berry, 2011).

The past two decades have brought significant growth in the use of virtual teams, which has been influenced by globalisation, rapid innovation and better access to infrastructure, such as internet, technology and basic needs as well. The quality of networking and collaboration technologies has improved, and the talent pool has become globally accessible (Dulebohn–Hoch, 2017). The benefits arising with virtual teams are, amongst others, flexibility, cost efficiency, better utilisation of time and space, and maximising expertise of the globally dispersed talent pool. At the same time these benefits pose several challenges to teams, such as overcoming a lack of personal connections, different cultural backgrounds, language barriers and technological issues (Kupa, 2020).

The role of the leader is to help overcome these challenges and exploit the underlying benefits and opportunities. The focus of leaders in virtual teams is performance management and team development; however due to lack of face-to-face interactions the latter – focusing on mentoring, coaching and learning functions – is difficult to perform (Bell– Kozlowski, 2002). Learning and knowledge development as part of team development is often hindered even when using various tools for communication due to distance and lack of face-to-face contact (Bosch-Sijtsema–Haapamäki, 2014). Zakaria et al. (2004) noted that learning is often facilitated by not only verbal or written communication, but by transmitting information via non-verbal clues such as voice modulations, metaphors, and storytelling, which are not always present in a virtual team's learning activities. Learning and development individually in virtual teams requires higher standards of independency than in traditional face-to face teams, which makes Self-Directed Learning more significant in virtual teams.

1.2. SELF-DIRECTED LEARNING

1.2.1. THE SDL THEORY

Self-Directed Learning became an instrument of fostering life-long learning in higher education, but the theory is significant in virtual teams as well. SDL enables individuals to identify and assess their training and learning needs, set objectives, act proactively in setting up their learning strategy, and evaluate their performance and learning outcomes. Thus, SDL is a process where individuals take the initiative to determine their learning needs, formulate their goals, identify resources and define learning strategies (Knowles, 1975).

Though SDL focuses on the individuals' independency in their learning journey, Greg (1993) and Garrison (1997) both argued that SDL should also enable cooperation and utilise the team, peers or anyone who can be considered a learning resource. SDL can be used for enhancing both private and professional knowledge irrespective of institutional, geographical or situational differences (Abdullah et al., 2008), which also confirms its importance in virtual team settings. With the rapid improvement in diverse technology, online and virtual learning tools are readily available for learners. These are frequently used in virtual teams as well.

The traits individuals should have in order to be ready for SDL learning strategies are categorised by Fisher et al. (2001) into three main domains: self-management, self-control and desire for learning. Self-management refers to the ability of the learners to identify their needs, set their goals, and allocate their energy and time to learning. Self-control refers to the independency of the SDL learners, meaning that the learner is an independent individual, capable of analysing, planning, implementing and assessing his/her learning activities independently. Desire for learning refers to the strong motivation of learners to acquire knowledge (Fisher et al., 2001).

1.2.2. SDL MEASUREMENTS

There are several instruments that have been developed to measure SDL, such as the Self-Directed Learning Readiness Scale (SDLRS) (Guglielmino, 1997), which is one of the first instruments to measure self-direction in learning and has been validated in several academic studies. One of these is the Self-Directed Learning Readiness Scale for Nursing Education (SDLRSNE) (Fisher et al., 2001), which is an adaptation of Guglielmino's SDLRS for the nursing education sector, and it has been validated in several academic studies.

Similar instruments are the Self-Directed Learning Instrument (SDLI) (Cheng et al., 2010) and the Self-Rating Scale of Self-Directed Learning (SRSSDL) (Williamson, 2007). These instruments have also been translated into various languages and adapted for different scenarios, authenticating the scientific interest for this type of measurement.

2. METHODOLOGY

2.1. RESEARCH STRATEGY AND HYPOTHESES

The purpose of the research is to provide a thorough literature review in virtual teams and SDLE studies and to conduct a confirmatory factor analysis of the SDLRSNE in virtual teams. The aim of this study is to – through statistical analysis – confirm that the same subscales are applicable in virtual teams, such as in nursing education, or if such confirmation is not possible explain the differences in the scaling. The study will also compare results in virtual teams to those in previous studies.

The SDLRSNE has been chosen to be the instrument tested as it has been validated several times and the wording of the 40 statements is simplistic enough to be understandable for those who speak English as their second language. Even though the SDLRSNE was specifically tested in nursing education, the statements have no specific references to nursing activities, thus were deemed fit to be tested in other sectors as well.

The following two hypotheses are to be tested through the research:

1. SDLRSNE as an instrument to test self-directed learning readiness is suitable to be applied in virtual teams with the same subscales.
2. The SDLR scores in virtual teams are higher compared to nursing education and other studies.

The plan of action in achieving the purpose of this research is as follows:

- Performing a critical literature review of the virtual team in SDL literature and the results of previous studies.
- Conducting a survey as per the Self-Directed Learning Readiness Scale in Nursing Education questionnaire of Fisher et al. (2001).

The research approach is sequential: explanatory research will be conducted to explain the relationship between the variables in the SDLRSNE in virtual teams, while descriptive statistics will be used to compare the scores achieved by the members of virtual teams with other studies' results. Both qualitative and quantitative methods will be used to evaluate the results of the survey (Saunders et al., 2019).

2.2. DATA COLLECTION

The critical literature review has already been performed and an excerpt of the findings has been provided in the research design. During this exercise several books, book chapters, journal papers and dissertations have been reviewed and selected.

The quantitative data collection has also been executed through a questionnaire, with demographic data also being collected for further analysis. The questionnaire was a modified Self-Directed Learning Readiness Scale, which was initially developed by Guglielmino (1977) and since then used with certain

modifications in nursing education to measure self-directed learning readiness of students (Fisher et al., 2001). Several studies (Fisher et al., 2001; Collins, 2004; Fisher–King, 2010; Senyuva–Kaya, 2014) have confirmed the validity of Fisher's modified SDLRS and the need for its wider application outside of educational institutions has also been raised.

The SDLRS as per Fisher et al. (2001) also known as SDLRSNE consists of 40 items, categorised into three subscales as follows:

Self-Management:

- I manage my time well
- I am self-disciplined
- I am organized
- I set strict time frames
- I have good management skills
- I am methodical
- I am systematic in my learning
- I set specific times for my study
- I solve problems using a plan
- I prioritize my work
- I can be trusted to pursue my own learning
- I prefer to plan my own learning
- I am confident in my ability to search out information

Desire for Learning:

- I want to learn new information
- I enjoy learning new information
- I have a need to learn
- I enjoy a challenge
- I enjoy studying
- I critically evaluate new ideas
- I like to gather the facts before I make a decision
- I like to evaluate what I do
- I am open to new ideas
- I learn from my mistakes
- I need to know why
- When presented with a problem I cannot resolve, I will ask for assistance

Self-Control:

- I prefer to set my own goals
- I like to make decisions for myself
- I am responsible for my own decisions/actions
- I am in control of my life
- I have high personal standards
- I prefer to set my own learning goals
- I evaluate my own performance

- I am logical
- I am responsible
- I have high personal expectations
- I am able to focus on a problem
- I am aware of my own limitations
- I can find out information for myself
- I have high beliefs in my abilities
- I prefer to set my own criteria on which to evaluate my performance

The questions and their suitability to be tested in the planned manner have been peer-reviewed. Based on this exercise with the involvement of a focus group of PhD students at Széchenyi István University of Győr, the questionnaire consisted of the same 40 items and subscales with the intention of measuring self-directed learning readiness in virtual teams.

The data collection from the questionnaire started the end of September 2020 and continued until the end of October. Participants were asked to evaluate the items through a five-point Likert scale to the degree that individual items reflect their own characteristics. Score 1 indicated "strongly disagree", while score 5 indicated "strongly agree". The data was collected anonymously and voluntarily.

2.3. RESEARCH ATTRIBUTES

2.3.1. TIME AND SPACE

The questionnaire is aimed at analysing the SDLRS score and fit for virtual teams currently in Hungary. This means that only those participants shall be included in the data analysis who have been working from home in Hungary or working from out-of-office locations in the current home-office-heavy work environment.

The place of data collection was Hungary, with emphasis on individuals working for companies operating in Hungary. The aim of this study is to evaluate the SDLRS in virtual teams, thus the participants have been informed to only fill out the questionnaire if they are part of either organisational or project teams.

2.3.2. LANGUAGE

The SDLRSNE questionnaire has been prepared and validated in English, and there is no official and validated Hungarian translation available. Thus, the questionnaire was circulated as per the original wording of Fisher et al. 2001.

In order to avoid misunderstandings a peer-review has been performed by a focus group to ensure that the English wording is clear and to identify any issues that require clarification. The peer-review did not find any issues and approved the application of the original wording.

2.4. DATA ANALYSIS

2.4.1. FACTOR ANALYSIS

Factor analysis is used to analyse when there is a complex phenomenon that cannot be measured via a single question. Factor analysis combines a series of questions about the same phenomenon into a single measure, i.e., factor. These factors are the observed measures of the latent phenomenon (Fricker et al., 2012).

Through factor analysis, those independent variables could be identified that comprise common underlying dimensions which help identifying the variables that are correlated with each other but are relatively independent from other data sets. Factor analysis has two types: exploratory and confirmatory. The exploratory factor analysis focuses on exploring data to find an acceptable set of factors and its goal is to discover likely factors that account for around 50% of the common variation in the observed items. Confirmatory factor analysis begins with a theory of how factors are constructed and whether this structure fits the observed data (Fricker et al., 2012).

This research will use a confirmatory factor analysis, as variables in the SDLRS instruments are chosen specifically to illustrate the underlying process indicated. In this case it will be tested whether the factor structure of self-management, desire for learning and self-control are also present in virtual teams (Hu–Bentler, 1999). Confirmatory factor analysis has been used by Fisher and King (2010) and other researchers (Collins, 2004; Chakkaravarthy et al., 2020), who have confirmed the factor structure's applicability with only minor modifications (i.e., in the case of Fisher and King's 2010 confirmation three statements had to be removed to fit the model).

2.4.2. RELIABILITY TESTING AND DESCRIPTIVE STATISTICS

As outlined by Saunders et al. (2019) in order for a questionnaire to be valid, it should not only be reliable but also consistent and internally valid. According to Mitchel (1996) there are three common approaches to test the actual reliability: test re-test, internal consistency and alternative forms. This study will calculate the internal consistency using Cronbach's alpha. The Cronbach alpha measures the consistency of responses to a subset of questions that are combined as a scale to measure a concept.

The Cronbach alpha can measure between 0 and 1. Values of or above 0.7 indicate internal consistency. The alpha coefficient has also been chosen to measure consistency in previous SDLRS studies (Fisher et al. 2001; Collins, 2004; Fisher–King, 2010; Senyuva–Kaya, 2014; Soliman–Al-shaikh, 2015, Chakkaravarthy et al., 2020) where both the total scales and the sub-scales reported a Cronbach alpha above 0.8.

Besides factor analysis, descriptive statistics will be used to compare the actual result of the SDLRS data collection with existing studies to validate the second hypothesis of the research. The descriptive statistics will also be used to draw conclusions and identify further research directions.

3. CONCLUSIONS

This paper summarized the research design of a future publication to be submitted about Self-Directed Learning attributes in virtual teams and provided a short introduction to the existing literature on virtual teams and Self-Directed Learning and its measurements. Virtual teams differ from traditional teams in their set-up, operations, dynamics, and how leaders can effectively lead these teams. Geographical differences make learning more challenging, while the proactivity and independency of the team members is a key component in their learning. Self-Directed Learning, i.e., the responsibility learners accept in their own learning and the existence of the abilities, attitudes and personality traits can be measured through the Self-Directed Learning Readiness Scales, which have been used mainly in nursing education.

The literature review on virtual teams and Self-Directed Learning and its measurements has already been performed and the SDLRSNE, as an appropriate measurement, has been chosen to be tested in the population of virtual teams in Hungary. An action plan to execute the research was provided with methodological overview on the steps to be performed to achieve the research goal. The research goal has been set up in line with the literature gap identified in previous research papers, which mostly focused on team dynamics, benefits and challenges in virtual teams, however articles on individual learning paths and learning itself are not widely present in the current academic literature.

After the short literature review, the chosen SDLRS model was summarised in this paper. The model has been peer-reviewed, the specific demographics and attributes of the participants to be used in this research have also been identified and the data collection plan has been also set-up and executed. The collected data will be evaluated through confirmatory factor analysis and descriptive statistics to test the fit of the SDLRSNE model in virtual teams and also analyse the readiness of virtual team members for Self-Directed Learning in early 2021. The confirmatory factor analysis will be used to test the fit of the SDLRSNE factor structure to virtual teams, i.e., whether the Self-Management, Self-Control and Desire for Learning are also fitting factors in the case of virtual teams. The research also focuses on comparing the SDLRS scores of members of virtual teams and the scores from previous research with the intent of proving that working in virtual teams requires higher scores.

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