



Ready? Steady? Grow! Readiness for Participating in Learning in Dual Education

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Abstract

Pupils' and students' learning in the workplace and dual education has drawn increased attention because it is, among others, relevant in combating youth unemployment, increasing individual employability, and organisations' ability to provide high quality services and products. However, research focusing on pupils' and students' readiness to participate in learning in the workplace is scarce and scattered. The present study was conducted to get a deeper insight into readiness to participate in learning in the workplace, and more particular in the Flemish (Belgium) context of dual education. The study applied a multi-method approach including literature review, document study, semi-structured interviews and member checking. The study resulted in a conceptualisation of 'willingness to participate in learning in the workplace' and 'maturity for learning in the workplace' including clusters of competencies related to participation in the workplace, learning in the workplace, and motivation for learning and participating in the workplace. This conceptualisation contributes to the development of policy and practice through providing a basis for assessing readiness to participate in dual education.

Keywords Learning in the workplace · Dual learning · Readiness for dual learning · Vocational education and training

Introduction

In the context of vocational education, learning in the workplace is often part of the educational approach albeit designed in various ways such as apprenticeships and ways of alternating learning at educational institutions and in organisations, for example dual education. While there is a large body of literature on workplace learning in educational contexts (e.g., Eiríksdóttir, 2020; Ferm et al., 2018; Latina

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& Ramirez, 2017), less attention has been paid to pupils' and students' readiness to learn in the workplace in the context of vocational education. The present study investigates what it means for pupils and students to be ready to participate in learning in the workplace.

Vocational education and training (VET) and more particular dual vocational education and training play an important role in supporting students' competency development (Billett, 2001; Virtanen et al., 2014). Dual VET is also interesting because of the economic benefits. Research has proven that (dual) VET can contribute to a more robust economy and high quality of products and services (Deissinger & Gonon, 2021). It is also argued that dual VET contributes to a lower youth unemployment in countries where it is common and respected such as in Germany and Switzerland (Deissinger, 2015; Deissinger & Gonon, 2021) and that dual VET supports school leavers in their transition into the workplace (Deissinger, 2015).

In the past years, various countries and politicians became interested in dual education because of the previously mentioned benefits. Also in Flanders (the northern part of Belgium), interest in dual education has been sparked and this resulted in a memorandum for dual education. The memorandum for dual education aimed to further extend and operationalise dual education resulting in the recognition of dual education as a full-fledged learning trajectory (Crevits & Muyters, 2015). Prioritising dual learning as a fully-fledged learning trajectory is not obvious, because unlike learning in education, learning is not always the primary goal in the workplace. In learning in the workplace, performing the job is paramount. However, previous research shows that not everybody might be able to learn in the workplace (e.g. Billett, 2001). The memorandum bis 'Dual education: A fully-fledged qualifying learning pathway' (Crevits & Muyters, 2015) acknowledges that not all pupils or students within the target group of 15–25 year olds will be able to acquire competencies in the workplace. The memorandum elaborates on the previous and states that it is important to estimate pupils' and students' readiness to participate in learning in the workplace. The premise that pupils' and students' readiness to participate in learning in the workplace is important, has been argued upon by others. Billett (2001) states that being ready to participate in learning in the workplace is central to the quality of learning in the workplace. Moreover, Billett (2001) emphasises the importance of offering opportunities to participate in the workplace, and the ability of the learner to recognise and to take advantage of these opportunities. So far, little research has focused on the starting competencies of pupils and students that are necessary to successfully take part in dual education. However, this is an important link in the development of high-quality learning pathways that maximise pupils' and students' learning chances, their chances on successfully completing their pathways, eventually leading to a smooth transition into working life.

Against this background, the present study aims to contribute to the clarification of concepts related to 'being ready to participate in learning in the workplace in the context of dual education'. More particular, the study aims to contribute to the clarification of the concepts which are proposed in the Flemish memorandum for dual education (Crevits & Muyters, 2015): 'maturity for learning in the workplace' and 'willingness to participate in learning in the workplace'. A clarification of these concepts contributes to a common and substantiated framework for the actors (schools,

organisations, and pupils/students) involved in implementing dual education. The clarification of these concepts is inspiring for areas other than Flanders as well. Indeed, little research on ‘maturity for learning in the workplace’ and ‘willingness to participate in learning in the workplace’ has been conducted up until now. The availability of a substantiated framework paves the pathway for the development of tools for measuring readiness to participate in dual education. The development of such instruments is not central to the current study but is an important point of interest for follow-up research. Instruments measuring pupils’ and students’ readiness to participate in dual education, facilitate the decision-making about appropriate trajectories for pupils and students, and ensure that pupils, students, and the workplace can both gain maximally out of implementing dual education.

Theoretical Framework

The theoretical framework provides background on workplace learning, dual education, and readiness for learning in the workplace and dual education. First, dual education is introduced. Subsequently, the concept ‘competent to participate in learning in the workplace’ is discussed. The discussion of these concepts serves the aim of the study, clarifying the concepts ‘maturity for learning in the workplace’ and ‘willingness to participate in learning in the workplace’.

Dual Education

Dual education includes learning in working environments and learning in school environments. Dual education assumes that pupils and students not only apply what they have learned at school in the workplace, but also gain knowledge, skills and attitudes in the workplace which were not introduced in the school environment. Approaches to dual education can vary slightly, but most dual learning programmes combine two to four days of working in the workplace and on the remaining one to three days the pupils are taught at school. In Flanders (Belgium), where the current study was conducted, the Flemish Ministry of Education and Training drew up a memorandum for dual education (Crevits & Muyters, 2015). In this memorandum, dual education is considered as an intensive form of workplace learning and is considered as training where competencies are predominantly acquired in the workplace with 60% of time spent in the workplace as target.

Workplace learning is a complex blend of formal learning, non-formal and informal learning (Tynjälä, 2013; Werquin, 2010), enabling the acquirement of job-related competencies in view of quality performance (Streumer, 2010). In workplace learning, the workplace comprises the learning environment and it assumes that learners acquire work-related competencies implicitly and explicitly while working (Eraut, 2000; Kyndt et al., 2021). Hence, it is not always easy to distinguish between learning in the workplace and working.

In the workplace, pupils face real life situations which allow them to acquire practical skills and professional ways of working, whereas at school, pupils are exposed

to more abstract, conceptual knowledge (Schwendimann et al., 2015; Tynjälä, 2013). Since dual learning takes place in different environments, the acquisition of knowledge, skills and/or attitudes is often situated in one of these environments. Hence, attention must be paid to transfer of the acquired knowledge, skills and/or attitudes between the environments involved (Schwendimann et al., 2015). In order to elicit integrated process knowledge, workplace and school experiences must be aligned (Brockmann et al., 2008).

Readiness to Participate in Dual Education

Dual education is based on the idea that a learner is competent to participate in workplace learning. However, little research has questioned concepts such as ‘being willing and mature to participate in dual education’. An exploratory overview of concepts related to ‘being willing and mature enough to participate in dual education’ is provided in the following paragraphs. Subsequently, the concept ‘Ausbildungsreife’ emerging from the German context and the concept ‘learning readiness’ are discussed. These concepts are introduced because they are relevant as a starting point for further researching readiness for learning in the workplace.

Readiness for Learning in the Workplace

First, concepts originating from research focusing on the transition from school into the labour market are presented. Transition into the labour market is often challenging, because school leavers do not always possess the necessary competencies to be deployable in the workplace (Nilsson, 2010). The latter finding prompted researchers to investigate the concept ‘being ready to transition into the workplace’ and to focus more particularly on competencies leading to successful participation in the workplace and competencies related to readiness to participate.

The literature provides various concepts describing competencies related to successfulness in the workplace such as ‘employability’ or ‘employability skills’ (Caballero & Walker, 2010; Masole & Van Dyk, 2016; Mason et al., 2009; Yorke, 2004). Yorke (2004) describes employability as a combination of skills, insights, and characteristics. Mason et al. (2009) explain the concept ‘employability skills’ as having relevant knowledge, skills, attitudes, and commercial insight. Masole and van Dyk (2016) exemplify the latter concept as a combination of generic and job-related competencies and skills, and characteristics.

Furthermore, the literature offers concepts focusing on the readiness to participate in the workplace such as ‘career readiness’ (Strauser et al., 2013), ‘workforce readiness’ (O’Neill et al., 1997) and ‘preparation for the workforce’ (Burrus et al., 2017). Based on the latter and Ilmarinen and Tuomi (1992), ‘Readiness to participate in the workplace’ is described as the ability to make appropriate career and work choices considering relevant context factors such as the family, social, and societal situation. In addition, the concepts ‘career adaptability’ and ‘career maturity’ emerged. ‘Career adaptability’ (Savickas, 1997) is a concept that refers to the resources one has to deal with work-related changes in his/her professional life.

Career adaptability fosters personal development, job satisfaction, effectiveness, and stability (Savickas & Porfeli, 2012). The construct ‘career maturity’ faces the ability to cope with developmental challenges throughout various life stages (Super, 1955). It can also be understood as the extent to which someone is ready and able to make career choices (Wiernik & Wille, 2017).

‘Ausbildungsreife’: Ready for Vocational Education and Training and Dual Education

‘Ausbildungsreife’ is a German concept in use in the context of Vocational Education and Training (VET), and dual education. An expert group (2005) commissioned by the German Federal Agency for Work (Bundesagentur für Arbeit) developed the following definition:

A person can be considered as ‘ready to participate in vocational education and training’ when he/she possesses general learning and working abilities, and meets the entry requirements for starting vocational education and training. This dispenses the specific requirements of separate professions, which are used to assess the aptitude of the respective profession. If the person involved does not show readiness to participate in vocational education and training, it is possible that the readiness further develops and will be reached in the future. (Nationaler Pakt für Ausbildung und Fachkräftenachwuchs in Deutschland, 2006, p. 13, translated by authors).

According to this definition, ‘Ausbildungsreife’ signifies youngsters can participate in VET and can complete it successfully. Moreover, the definition focusses on more generic skills, rather than job or profession related skills.

Learning Readiness

The previously mentioned concepts focus predominantly on the workplace aspect of dual learning. However, the learning component, which is an equally important component in dual education, cannot be neglected. Hence, the concept ‘individual learning readiness’ (Ellström, 2001) is included. ‘Individual learning readiness’ refers to subjective aspects to ensure learning in the workplace. Ellström (2001) refers to motivation, development needs, and self-efficacy as important triggers to elicit learning in the workplace. Rigalizzo (2019) expands Ellström’s conceptualisation and adds that being ready to learn includes ones willingness to take on the challenge and doing so. Learning oriented individuals who have a greater need for thinking tasks and are more inquisitive, are more likely to take on challenging learning tasks in work environments (Rigalizzo, 2019).

Present Study

Previous research has focused on pupils’, students’ and employees’ learning in the workplace. However, research considering pupils’ and students’ readiness to participate in learning in the workplace and more particular in participating in

learning in the workplace in dual learning trajectories, has as far as we know, not been systematically conducted. Hence, the current study investigates pupils' 'readiness to participate in learning in the workplace' within the context of dual learning in Flanders (Belgium). The study searches for answers on the following research questions:

Main Research Question: How can 'willingness to participate in learning in the workplace' and 'maturity for learning in the workplace' be conceptualised in the context of dual education?

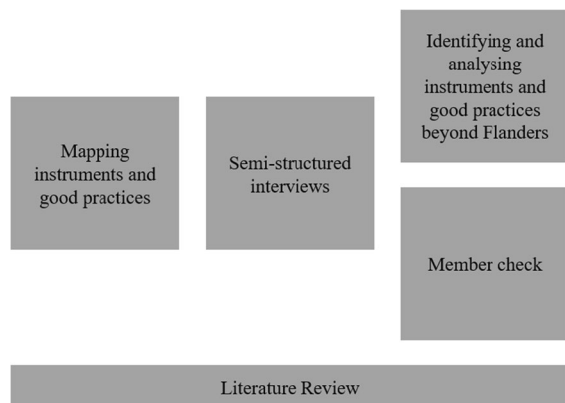
Secondary Research Question: Which different dimensions should be included in the concepts of 'willingness to participate in learning in the workplace' and 'maturity for learning in the workplace'?

Method

Given the underexplored nature of the concepts 'willingness to participate in learning in the workplace' and 'maturity for learning in the workplace', and the need to conceptualise the constructs, a qualitative approach was adopted. A multi-method approach was chosen to get a thorough understanding of the concepts. Hence, an approach consisting of document studies, semi-structured interviews, a review of the literature and member checking was applied. First, existing instruments and good practices in Flanders were mapped. To get a thorough understanding of these instruments and good practices a number of semi-structured interviews were further carried out in phase 1. Second, various semi-structured interviews were carried out with programme counsellors and employees of enterprises involved in dual education. Third, an international approach was adopted and instruments and good practices beyond Flanders were explored. Fourth, the findings were presented to the participants for a member check.

Throughout the research an ongoing literature review was conducted. The approach is displayed in Fig. 1 below.

Fig. 1 Approach of the study



Mapping Instruments and Good Practices Supplemented with Semi-Structured Interviews

First, relevant instruments and good practices originating from Flanders were collected to get an insight in the 'willingness to participate in learning in the workplace' and 'maturity to participate in learning in the workplace'. The instruments ($n=10$) and good practices ($n=10$) were selected through searching for and screening reports, instruments, and websites. This was done keeping the concepts 'willingness to participate in learning in the workplace' and 'maturity to participate in learning in the workplace' and the usability of the instruments in mind. The research team also participated in meetings of policy teams of organisations involved in developing dual learning. These policy meetings were a gathering of all partners who were involved in developing dual education. The attendance of policy meetings allowed to get a broad view on the screening instruments used in practice. Subsequently, a selection of good practices ($n=5$) was made to be further explored through semi-structured interviews. The semi-structured interviews were conducted with people involved in the development and/or implementation of the good practice and were based on an interview guide. Sample questions are: What should pupils/students be able to do when they would like to participate in workplace learning in dual education? Why do you think this is relevant? Do you use particular screening tools? What experiences do you have with students participating in workplace learning in dual education? The selection criteria for the screening instruments and good practices assumed the discussion and application of various dimensions of 'willingness to participate in learning in the workplace' and 'maturity to participate in learning in the workplace'. Moreover, the selected instruments and practices had to be in use for dual education for adolescents and young adults between 16 and 25 years old, in learning trajectories where a substantial component was accomplished in the workplace.

Semi-Structured Interviews

Second, semi-structured interviews were conducted. For clarity, the semi-structured interviews in this phase, are not the same as the semi-structured interviews in the previous phase. The aim of this data-collection phase was to get a deeper insight in the conceptualisation of 'willingness to participate in learning in the workplace' and 'maturity to participate in learning in the workplace' by the participants. Moreover, this phase focused on unravelling the participants' perceptions of dimensions of readiness necessary to participate in learning in the workplace.

Sample

The purposive sample consisted of ten schools with various pathways and ten enterprises who participated in a pilot project on dual learning funded by ESF (European Social Fund). These schools and enterprises were selected taking into account the

inclusion of a variety of pathways (maximum variation) and aiming for data saturation (Cohen et al., 2011). Data saturation refers to the fact that there is little chance that other information would emerge from a larger sample. Data saturation occurred with the ten schools and ten enterprises.

In total, 20 interviews were conducted and recorded with permission of the participant. Verbal consent was given by all participants and participants were allowed to ask questions about the research and data collection. The interviewees were programme counsellors, i.e. teachers responsible for pupils' and students' trajectories at school and in the workplace, and in one school the principal and the technical advisor. These interviewees referred the researchers to their partners in the enterprises. All ten proposed employees of the partner-enterprises were willing to participate in an interview. The position of the interviewees from the partner-enterprises varied from mentor, HR-employee responsible for learning in the workplace, maintenance manager to director. All interviewees stated that they were highly involved in the selection and daily supervision of pupils, in dual learning and other ways of learning in the workplace.

Instruments

Two semi-structured interview guides were drawn up for conducting the interviews, one interview guide for the teacher – programme counsellors and one interview guide for the interviews with the employees in the enterprises. The interviews consisted of three phases. In phase 1, open questions were asked gauging interviewees' perceptions of crucial components of 'willingness to participate in learning in the workplace' and 'maturity to participate in learning in the workplace'. Subsequently, the initial requirements for the two latter concepts were questioned. The second phase asked for critical incidents (Flanagan, 1954) and dug in to concrete situations of pupils. The interviewees were asked to provide at least one example of a pupil who complied with 'willingness to participate in learning in the workplace' and 'maturity to participate in learning in the workplace' and one who did not. Cohen et al. (2011) indicate that this method allows to capture authentic, rich, and in-depth information.

Analysis

The NVivo software package (NVivo 10) was used to analyse the transcribed interviews. The interviews were coded by two researchers based on a coding tree. The coding tree (see Table 1) was developed based on the dimensions from the analysis of the Flemish instruments. First, the interviews were coded in a deductive way enabling the researchers to get an insight in the degree of recognition by the participants. Indeed, it was of interest to determine which dimensions from the initial analysis were recognised as a starting condition in the context of dual learning. Second, the interviews were coded in an inductive way, allowing codes to emerge from the data. The second coding round resulted in refinements and subdivisions of the initial coding tree.

Table 1 Initial coding tree

Reliability and punctuality	Complying with agreements (Authors' description).
Learning	Learning is the process of acquiring, new understanding, knowledge, behaviours, skills, values, attitudes and preferences (Gross, 2010).
Assertiveness	Assertiveness is the ability to express one's own opinion with respect for others (e.g. Kyndt et al., 2013).
Communication	Communication is the process of understanding and sharing meaning (Pearson & Nelson, 2000).
Listening	Listening consists of three dimensions: sensing, processing and responding. In summary these three dimensions include the ability to hear the words, noticing the non-verbal cues, understanding the message the speaker conveyed and responding to the verbal and non-verbal messages. A good listener assures the speaker that they are being heard and encourages them to continue if appropriate (Drollinger et al., 2006).
Goal oriented	Learning intentions and learning objectives (e.g. Brophy, 2004; Harackiewicz et al., 2002; Pintrich, 2000).
Motivation	The degree to which one is motivated to participate in learning (e.g. Van den Broeck et al., 2011).
Self-Efficacy	Self-efficacy reflects the extent to which one is confident and trusts upon his/her abilities to effectively plan, organise, and achieve predetermined objectives, and is capable to meet job-related expectations (Bandura, 1997; Gist & Mitchell, 1992). In summary self- efficacy is described as believing in one's competencies to learn and participate in the workplace.
Dealing with conflict	Dealing with various conflicts in the workplace or with the various actors involved (Authors' description).
Showing respect	Showing respect for people and material (Authors' description).
Monitoring and checking	Monitoring and checking assignments, activities and quality of performance (Authors' description).
Planning	Planning one's assignments and activities (Authors' description).
Reflecting	Reflecting is a process of thinking and doing aiming to acquire new skills (Schön, 1987).

For a subset of the coded interviews ($n=4$), it was checked to which extent the coding matched among the two researchers. This quality check resulted in a Cohen's kappa score of 0.79, which is substantial (Stemler, 2001).

Third, the dimensions that were extracted from the inventory of the Flemish policy instruments, were presented to interviewees via the card-sorting technique (Cohen et al., 2011; Spradley, 1979). They were asked to sort cards: on the one hand a set with dimensions which are important at the start of a dual learning trajectory and on the other hand a set with dimensions that are less relevant or which the respondents believed that can be developed during the dual learning trajectory. When the participants received the cards, they were asked to explain their understanding of the constructs. In case the interpretation of the participants deviated from the researchers' interpretation, the constructs were further clarified or corrected.

In this way, it was intended to do an initial validation of the framework as presented in Fig. 2 (see *infra*). Moreover, it allowed to explore whether the listed

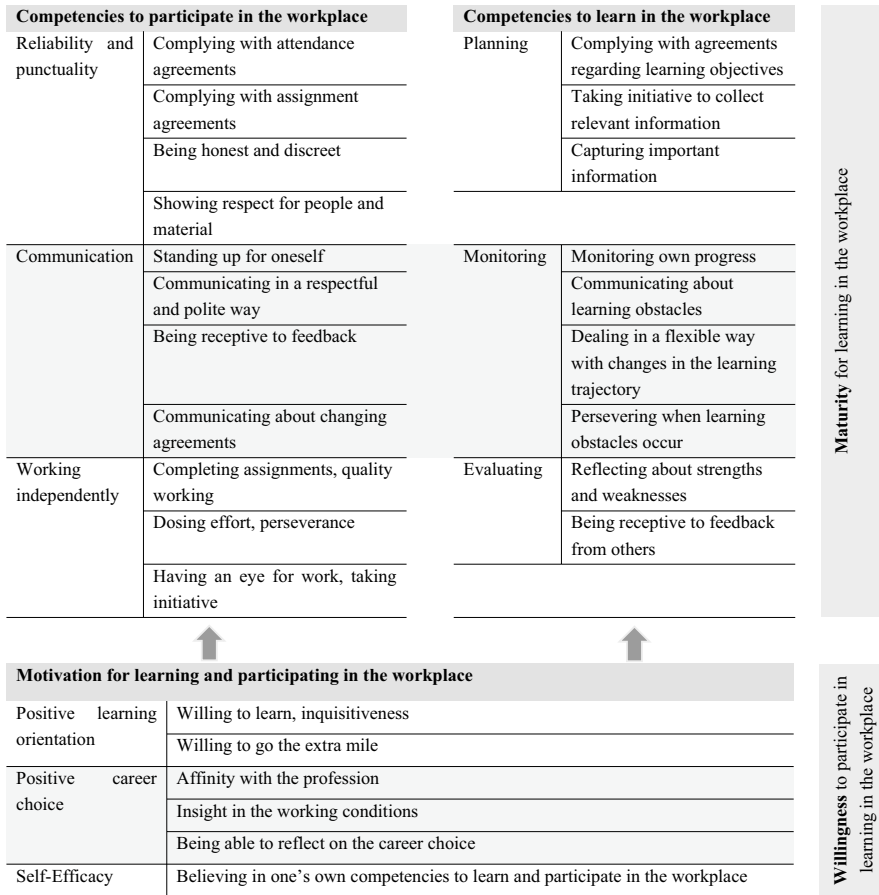


Fig. 2 Dimensions of willingness to participate in learning in the workplace and maturity for learning in the workplace

dimensions were present in the framework and whether all dimensions were recognised by the participants. In addition, the intention was to confront the participants with concepts within the real-life context and to gain insight into the links between the dimensions. The aim of the inductive coding was to gain a better understanding of the aspects that emerge within each of the dimensions. This enabled the researcher to get an insight in the dominance of subdimensions, to arrive at a more focussed approach of the conceptualisations of ‘willingness to participate in learning in the workplace’ and ‘maturity to participate in learning in the workplace’.

Identifying and Analysing Instruments and Good Practices beyond Flanders

Third, foreign instruments, good practices and research were identified and analysed to identify good practices beyond Flanders. Different search strategies were used to

identify a diverse collection of instruments and good practices. The international network of the involved researchers ($n=48$) was consulted and the request was distributed via the mailing list of VETNET, the European research network on vocational education and training. Various contacts ($n=18$) passed on information or relevant leads. In addition, employees from international organisations such as OECD (Organisation for Economic Cooperation and Development), Cedefop (European Centre for the Development of Vocational Training) and Efvet (European Forum for Vocational Education and Training) were consulted. The internet was searched using the following search words: 'Work readiness', 'Readiness for apprenticeships', 'Willingness to learn', 'Willingness to work', 'Maturity dual education/apprenticeships', combined with 'instruments', 'screening', 'assessment' and 'evaluation'.

Subsequently, a document analysis was carried out, supplemented with e-mail/skype conversations about specific questions that remained unanswered after the document analysis was completed. An overview of the resources from the 11 selected countries is provided in Table 2.

During this phase, it was determined that there are few practices abroad in which adolescents' and young adults' readiness to work is formally screened before they enter dual learning trajectories. Moreover, the school often plays a limited or even a non-existing role in the screening. The selection criteria for the foreign instruments, good practices and research assumed the same conditions as the Flemish instruments, good practices, and research (see supra).

Member Check

Fourth, a member check was carried out. A member check allows to check whether the various practitioners involved in the research recognise the researchers' findings (Mortelmans, 2013). The findings were sent to the various schools and organisations

Table 2 Overview of screened countries and resources

Country	Resources
Australia	OECD Report, Websites, E-mail conversations
Denmark	NORD-Vet Report, Websites, E-mail conversations
Germany	Reports and literature about 'Ausbildungsreife', OECD Report, Report European Commission, Websites, E-mail conversations, Skype calls
France	Report European Commission, Websites
Finland	NORD-Vet Report, Scientific Literature, Websites, E-mail conversations
Lithuania	Cedefop Report
Malta	Cedefop Report
The Netherlands	Websites, E-mail conversations
Norway	NORD-Vet Report, Websites, E-mail conversations
United Kingdom	OECD Report, Websites, E-mail conversations
United States	OECD Report, Websites
Sweden	NORD-Vet Report, Scientific Literature, Websites, E-mail conversations, Skype calls
Switzerland	Websites, E-mail conversations, Skype calls

($n=30$) that had been consulted in the study to check the recognisability of the findings. The Flemish pupils' umbrella organisation was also asked for feedback. In total, 31 schools and organisations were asked for feedback resulting in feedback from 12 people from 12 organisations. The latter were pupils, programme counsellors, a school leader, technical advisor all having experience in screening pupils in the context of dual learning or related contexts.

The following questions were asked:

- Does this overview include all relevant dimensions/conditions?
- Does this overview provide the essential dimensions of 'willingness to participate in learning in the workplace' and 'maturity to participate in learning in the workplace'?
- Does this overview consist of obvious categories?
- Does this overview provide a good basis to support practice?

The feedback from the member check was incorporated in the final version of the dimensions.

Literature Review

Throughout the study, a literature review was carried out. In the literature review, antecedents of learning in the workplace were mapped. The literature review supported the orientation on the conceptual framework in use and supported the development of a thorough insight in the concepts related to 'willingness to participate in learning in the workplace' and 'maturity to participate in learning in the workplace'. On the other hand, we consulted scientific literature to identify predictors of learning and functioning in the workplace.

Results

The results section presents the conceptualisation of 'willingness to participate in learning in the workplace' and 'maturity for learning in the workplace' in a dual learning setting. Subsequently, the different dimensions of the concepts are discussed.

'Willingness to participate in learning in the workplace' and 'maturity for learning in the workplace' in a dual learning setting can be conceptualised as displayed in Fig. 2. The overview includes the dimensions of 'willingness to participate in learning in the workplace' and 'maturity for learning in the workplace' on which there is consensus in the literature and among the participants in the current study. The findings across different sources and the participants consider the competencies as central competencies to successfully complete the dual learning trajectory. It is of interest to gain insight into the extent to which these competencies are present at the start to find a matching workplace and to ensure a quality learning trajectory.

Maturity for learning in the workplace is conceptualised using a cluster of competencies referring to 'competent to participate in the workplace' and, on the other hand, a cluster of 'competencies for learning in the workplace'. This division illustrates that pupils in dual learning trajectories work and learn in the workplace and that they must possess competencies with regard to working and learning in the workplace to achieve a successful learning trajectory.

Maturity for learning in the workplace finds its foundations in motivation for learning and participation in the workplace. 'Motivation to learn and participate in the workplace' consists of three components: (1) positive learning orientation, (2) positive career choice and (3) self-efficacy. Pupils with a *positive learning orientation* are inquisitive and are willing to make efforts. Since pupils in dual learning trajectories learn in a more independent way, it is necessary to possess or being able to develop these skills at an appropriate pace. A *positive career choice* is another feature to ensure successful dual learning. In order to make a quality career choice, entering a dual learning trajectory must be preceded by a career orientation ensuring that the pupil gets an insight in the profession and the working conditions of the profession. Ideally, a career orientation includes self-reflection techniques focussing on the pupils' strengths and weaknesses. The latter facilitates participating in dual learning in an engaged way. *Self-efficacy* is of interest as well and refers to the extent to which one believes in his/her own competencies to learn and participate in the workplace.

The cluster 'competent to participate in learning in the workplace' consists of (1) reliability and punctuality, (2) communication and (3) working independently. These competencies promote pupils' participation in activities in the workplace and the integration of pupils in the workplace. Rapid integration predicts not least successful completion of the dual learning trajectory. *Reliability and punctuality* are considered as central competencies to promote integration. This implies that pupils comply with agreements regarding punctuality and presence, as well as regarding the assignments they have to fulfil. Family support or support from parental figures is recognised as a crucial factor in being able to meet the reliability and punctuality expectations. Pupils are also expected to be honest and admit mistakes rather than hide them. However, this is not obvious in all enterprises and therefore a point of interest for the companies. Being discreet refers to the fact that pupils can deal with confidential information from customers or the enterprise in a discreet manner. Hence, being discreet is linked with showing respect for people and materials. Pupils have to pay respect to all people in the organisation regardless of their cultural background, their beliefs or ideas. *Communicating* in a respectful way is important to achieve this goal. Pupils need to respectfully use the material they use and comply with the agreements made with regard to the use of the materials. This is also relevant with regard to safety in companies, which is highly relevant in many sectors. Furthermore, appropriate communication is important in terms of integration and participation in the workplace. The main point is that the pupil stands up for him or herself in the workplace without losing sight of communicating in a respectful and polite manner. It is not easy for a pupil to find his or her balance in standing up for oneself in a team of adult employees. Therefore, guidance at school and in the workplace is necessary to eventually support the pupil in developing appropriate communication

skills. Acceptance of feedback is a necessary competency which supports a thorough exchange of information. The latter is particularly relevant regarding learning in the workplace (see *infra*). A last feature of appropriate communication is the pupils' ability to communicate about deviation from assignments and agreements. Employers often show understanding but expect a clear communication about it.

Working independently is clearly a starting competency. Employers do not expect that pupils have all relevant competencies to work in a fully independent way. However, it is expected that pupils complete their assignments in a qualitative manner. It is also expected that a pupil doses his/her assignments and takes initiative when relevant, even if not explicitly asked for.

Apart from the competencies centred around participation the workplace, being competent to learn in the workplace comes to the front. Despite the importance of 'being competent to learn in the workplace', less attention is paid to it in existing instruments. Three competencies for learning in the workplace are determined: (1) planning, (2) monitoring and (3) evaluation. These competencies fit within the literature of self-regulated learning (Zimmerman, 2000). First, it is important that the pupil can plan his/her learning assignments. In the setting of dual learning, this means that the pupil has to comply with agreements with regard to the learning goals which are concluded with the school and the workplace (employer). In a later phase, the pupil can evolve towards setting own goals. It is crucial that a pupil collects the relevant information enabling the pupil to further learn and develop. Collecting relevant information can occur in various ways such as reading course texts, asking colleagues for additional information, searching the internet or observing how colleagues perform techniques. The pupil is also responsible for capturing important information such as taking notes or pictures. Second, monitoring the learning process is of interest. Monitoring one's learning process refers to getting insight in one's progress and communicating about what hinders their learning. Monitoring also means that pupils are able to deal in flexible ways with changes in the learning trajectory and persist if barriers for learning occur. Third, evaluating is an important competency. Reflecting about one's strengths and weaknesses supports the direction of the process of learning and development. Hence, it is important that a pupil is receptive for feedback.

Discussion

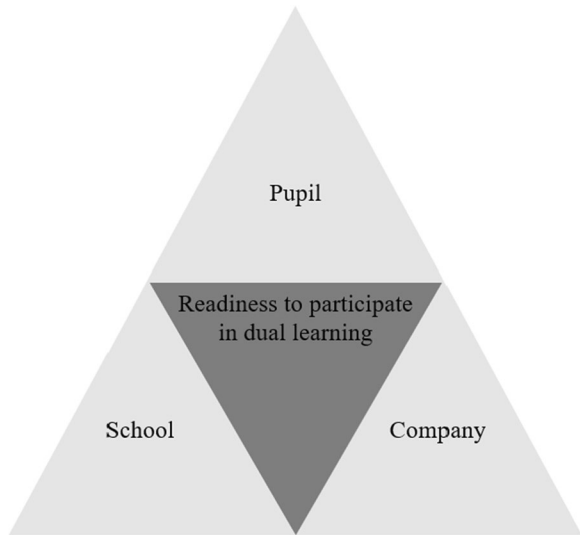
Workplace learning in dual education has been explored by research, however limited attention is paid to pupils' and students' readiness for learning in the workplace. Hence, this study conceptualised pupils' readiness to learn in the workplace, starting from the Flemish context and the constructs 'willingness to participate in learning in the workplace' and 'maturity for learning in the workplace'. The study aimed to map the various dimensions of 'willingness to participate in learning in the workplace' and 'maturity for learning in the workplace' and left room for other constructs to arise. Three main clusters of relevant competencies for dual learning could be determined: (1) motivation to learn and participate in the workplace, (2) competencies to participate in the workplace and

(3) competencies to learn in the workplace. Motivation to learn and participate in the workplace arose as a condition for learning in the workplace. Motivation is the construct on which the competencies to participate and learn in the workplace build. A positive learning orientation and belief in one's competencies are main dimensions of motivation for learning in the workplace. It is striking that being able to make a positive learning orientation is frequently perceived as an antecedent for the motivation for dual learning. Furthermore, the dimensions related to participating in the workplace, such as 'reliability and punctuality', appropriate communication and perseverance, turn out to be important. Lastly, the dimensions related to learning in the workplace are crucial to ensure a quality learning trajectory. The dimensions related to learning in the workplace point towards a lacuna in the existing literature and instruments: existing literature and instruments pay limited attention to competencies related to learning in the workplace and hence competencies such as planning, monitoring, and evaluating, and their subdimensions (see Fig. 2). This is contrary to the consensus on the importance of these dimensions.

The insights of this research support the focus on relevant competencies for workplace learning in dual education rather than necessary competencies. Conceptualisations are helpful, but practices from abroad warn against using these conceptualisations as a strict standard (e.g. Sloane, 2014). Several reasons for being careful with the use of conceptualisations as a strict standard can be named. First, the conceptualisations originate from the opinions of various stakeholders and the scientific literature. Employers vary in which dimensions they value the most. Moreover, employers are to various extents willing or able to provide support to pupils and/or students. Some participants suggest that the motivation to learn in the workplace is the most important cluster to look at, because the other clusters and their dimensions can be developed during the learning trajectory. The proposed conceptualisation (see Fig. 2) is hence rather a starting point to determine important dimensions in a particular field and a starting point for follow up research.

Second, setting requirements for pupils and students to participate in dual learning trajectories rather neglects the dynamic nature of growth opportunities in dual education. In dual education, dynamic growth opportunities can result due to a specific match of the features of a pupil/student and the features of an organisation. Overviews of skills which pupils must master to be admitted in dual education implies the risk that the responsibility for participating in dual learning is fully assigned to the pupil. However, both pupils and companies contribute in the dynamic process of pupils' growth in dual learning trajectories. Hence, the provided overview (see Fig. 2) does not intend to be a checklist for allowing one to take part in dual learning. The provided overview intends to be a manual for mapping pupils' willingness and maturity for learning in the workplace. It aims to facilitate the matching with the workplace and helps to guide and facilitate pupils' further development towards successful learning in the workplace. In this way, readiness to participate in learning in the workplace becomes a shared responsibility, rather than assigning it only to the pupil. School, pupil, and organisation have their responsibility in dual learning (Fig. 3). Moreover, family support or support from parental figures is recognised as a crucial factor in participating in learning in the workplace.

Fig. 3 Readiness to participate in dual education contextualised



Reasonable efforts have been made to conduct a reliable and valid study. However, every study has some limitations likewise the present study. The current study was conducted in Flanders and relies on document study and perceptions of various stakeholders. To make reliable generalisations, the authors state that future work is a necessity. Future research including comparative research between Flanders and other regions or countries, and including additional quantitative research can reinforce generalisations.

In this study, pupils were involved to a limited extent. The results were presented to the Flemish pupils' umbrella organisation for member checking. A more comprehensive study including pupils can give more voice to their approaches and insights. Further research into antecedents of pupils' participation in workplace learning and pupils' antecedents of learning in the workplace in dual trajectories is needed.

Finally, it should be emphasised that the dimensions of 'willingness to participate in learning in the workplace' and 'maturity for learning in the workplace' as proposed in the current study, are a first enumeration. Future studies can work towards a further development of the dimensions. The current study provides guidance for the development of matching instruments (pupil/student-organisation) and provides guidance for stakeholders, policy makers and decision takers. As a matter of fact, the findings in this study supported the development of the decree on dual learning.

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Declarations

Conflict of Interest No conflicts of interests nor competing interests.

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