DOI: 10.1111/ijtd.12276

RESEARCH ARTICLE

INTERNATIONAL JOURNAL OF Training and Development

Literature review of international empirical research on transfer of vocational education and training

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Funding information
Bundesministerium für Bildung und Forschung

Abstract

Although the practice of transferring vocational education and training (VET) structures internationally has a long tradition, there is still a lack of systematic research in this field. The various theoretical models and empirical approaches applied to analyse the transfer of the internationally very heterogeneous VET systems result in a strong fragmentation of the research landscape. Hence, consolidation and synthesizing efforts in international VET transfer research are required. This study focuses on the empirical research on VET transfer, analysing the impact and the evidential quality of the study results, and their significance. In this systematic literature review, a total of 231 relevant studies were found and of these, 26 studies were selected for full-text analysis based on predefined criteria. These empirical studies were analysed in a two-step procedure. First, the studies were classified into predefined superordinate categories (e.g., year, research objective, method, sample, participating countries, central result). Second, they were analysed in more depth following an integrative framework based on a research pyramid model and a model for

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assessing the quality of qualitative research. This critical twofold analysis of the current relevant literature indicates that there is extensive research on international VET transfer. So far, this field of research is characterized by case studies with predominantly qualitative designs and analysis methods. More methodological diversity, which includes longitudinal studies and comparative analyses, is important to this field to provide more well-founded research outcomes in the future. These, in turn, could provide practical and political actors with an evidence-based foundation for their decision-making. By identifying the specific strengths and shortcomings of the empirical research on VET transfer, we reveal central desiderata and derive recommendations on how to strengthen future research and evidence-based VET practice.

RESEARCH FOCUS AND OBJECTIVES

Relevance and theoretical background

Vocational education and training (VET) is a very complex field of both practice and research; it not only encompasses numerous aspects of professional education at the national level (e.g., school-based VET, apprenticeship systems, technical education, work-based learning) but also relates to various actors and stakeholders and consists of different structural elements. Consequently, VET constitutes a very diverse and heterogeneous field of practice and research, especially at an international level and from a comparative perspective (Clarke et al., 2021; Pilz & Li, 2020).

At the same time, VET practice has been a relevant and highly topical research issue for many years, driven not least by political reforms, social and economic challenges (such as youth unemployment), and remains present in political discourse (Caves et al., 2021; Strittmatter & Böhner, 2019). As national VET systems are characterized by considerable sociocultural, institutional, and temporal complexity (Wiemann et al., 2019), their nature results in a lack of systematic research on the internationally very heterogeneous models and approaches of VET and in a fragmentation of the research landscape. This study gap requires systematic consolidation and synthesizing work (Toepper et al., 2021).

Recently, Gessler et al. (2020) provided a classification of the various strands of international VET research that distinguishes between six fields: *development research, transfer research, European VET cooperation, service research, corporate research, and network research*. Each of these research fields is characterized by historical and sociocultural specifics that decisively influence the established theoretical and methodological approaches respectively. For an in-depth analysis of international VET research, it is therefore crucial to explicitly take these specifics into account.

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One of the fields, research on transfer of VET, is a very prominent area for research. The practice of transfer of educational systems and structures has a long (historical) tradition. This is especially true for the transfer of the German dual VET system, which is particularly oriented toward the labour market as well as toward the needs of companies (Barabasch & Wolf, 2011; Ebner, 2013; Jonda, 2012). The question of the transferability or exportability of VET systems in general and of the German VET system in particular to other countries has been studied for many decades (Dobischat & Düsseldorff, 2018). In this field, extensive international research has been conducted, and compared to other fields, a particularly large number of empirical studies is available (Li et al., 2019; Toepper et al., 2021).

One of the central characteristics of transfer research is that, in addition to examining transfer processes at the systemic level, numerous research projects and studies focus on the implementation of vocational training at the company level (Gessler, 2017; Peters, 2019; Van der Burgt et al., 2014). Most of the work focuses on the dual system and German multinational enterprises (MNEs) that establish dual vocational training in their foreign subsidiaries (Körbel et al., 2017; Li & Pilz, 2021; Pilz & Wiemann, 2021). In this context, various transfer-promoting and transfer-inhibiting factors can be identified at both the company-external and -internal levels (for an overview, see Toepper et al., 2021).

One of the central research findings is that the successful transfer of a VET system generally cannot take the form of a one-to-one transfer (Hummelsheim & Baur, 2014; Stockmann, 2013). Rather, a number of specific factors for successful transfer are identified in empirical studies (for an overview, see Toepper et al., 2021). For instance, based on a meta-evaluation of 23 studies and two meta-studies, Stockmann (2019) derives central (groups of) success factors for sustainable VET cooperation and successful transfer (design- and implementation-related, system-related, and institution-related factors). In this context, specific contextual factors in VET transfer were identified and systematically analysed in the recipient as well as in the transferring country (Wolf, 2011). Analyses of the specific interrelationships between VET and other areas of society in countries and particular regions are required to gain a better understanding of VET transfer—also beyond political motivation—of all parties involved (Barabasch & Wolf, 2011; Wiemann et al., 2019). Findings from these studies therefore often result from specific 'case studies' (see the section 'Results'). At the same time, they form a substantial foundation for deriving important implications for VET practice, that is, they guide the actions of practical and also political actors in this field (Dymock et al., 2009; Falk & Guenther, 2006; Li & Pilz, 2021; Westerhuis, 2008). Therefore, the quality of the studies on VET transfer and their results gains special importance.

In addition, research in this field is characterized by the fact that the transfer of VET systems is analysed by various disciplines, each with different perspectives, theoretical approaches, and methodological techniques (Toepper et al., 2021; Wiemann et al., 2019). This is particularly apparent when looking at the central concepts and terminology, which differ greatly in this field (Dolowitz & Marsh, 1996; Geiben, 2017). For instance, while the terms 'transfer' and 'export' are widely used in German-language research, 'policies (transfer)' is often used in the international context (Wiemann et al., 2019). This term describes the use of knowledge based on experience from other regions/countries (Dolowitz & Marsh, 1996).

Looking at these theoretical frameworks more deeply, a common element of most transfer-process models and approaches is the 'decision phase' of the political and practical actors (Barabasch & Wolf, 2011; Evans & Davies, 1999; Phillips & Ochs, 2003; Tanaka, 2005), which base their decisions on the available (empirical) knowledge. The subsequent phase describes the *implementation of the transfer*, which is therefore significantly determined by the actors

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involved and their *decisions* (*based on evidence*). This understanding in turn underlines the special claim to the quality of the knowledge generated in the empirical studies on transfer in VET, which is characteristic in this study field, and therefore needs specific consideration (Falk & Guenther, 2006). Since the 'decision phase' and the actual practical and political implementation of transfer rely on the best possible evidence-based results, a special focus of this paper is on the systematic analysis of the evidential quality of the study results, their significance, and their claims to validity in this study field.

Study aims and research questions

The systematic analysis presented in this paper is based on the literature review focusing on *transfer research in VET*. The aim of this review in 2021 was to provide a comprehensive and structured overview of the current state of international research and to analyse the multidisciplinary perspectives on VET transfer. In the review and analysis of the international state of transfer research conducted in 2021 (Toepper et al., 2021), 26 empirical studies were identified that fully meet the predefined selection criteria and analysed in more depth in the study presented here (see the section 'Conceptual and methodological framework'). Key findings and research desiderata identified in the review in 2021 can be summarized as follows: Studies on VET transfer addressed various aspects of transfer processes and contexts, using different theoretical-conceptual approaches and methodologies. Within this broad field of multi-disciplinary research, a high level of heterogeneity and various specific research foci and analytical approaches were identified. Studies in this field of research can be classified according to their methodological approach, identifying (1) studies that address the topic of VET transfer on a theoretical-conceptual level, (2) studies that deal with the topic empirically, and (3) meta-studies that examine transfer processes based on literature reviews or a meta-analysis. A significant number of studies lack relevant information, for example, on design, required to ensure the research quality of these studies and their results. For instance, basic information on the method, sample size, and analysis approach was often missing or not described sufficiently.

More specifically, the review in 2021 found some meta-analyses in this study area that have addressed various aspects of VET transfer, using very different theoretical-conceptual approaches and methodologies. Depending on the research interest and focus, the results of the studies were hardly comparable with each other, especially since the level of analysis also varies greatly. For example, Caves et al. (2021) analysed the existing literature on VET reform implementation for key determinants, trends, and gaps, using a determinant framework and synthesizing the available evidence on reform implementation in VET to summarize the field. The main foci of numerous meta-studies include, for instance, analyses of the constitutive elements of the German dual system and their (re-)design when transferred to other countries; analyses to what extent dual VET can be exported; examinations of the future of dual VET in German-speaking countries; and investigations as to how Germany, as a transferor, can transfer elements of the dual VET system to Asian countries (Gonon, 2014; Hummelsheim & Baur, 2014). Furthermore, meta-analyses were found that focused on developing a key variable model of central success factors for sustainable VET projects (Stockmann, 2019). Li and Pilz (2021) provide a broad understanding of VET transfer in their meta-analysis and underline the high level of complexity and challenges of VET transfer.

In addition to these meta-analytical studies, there are numerous relevant studies that address the VET transfer on a theoretical-conceptual level, while the majority of studies dealt

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with the topic empirically (30 studies) (Toepper et al., 2021). One of the striking findings from the analyses of the full texts of the empirical studies is that relevant information ensuring the research quality of these studies, that is, basic information on the method, sample size, and analysis approach, was often missing or not described sufficiently. Consequently, about one dozen of relevant studies could not be included in the final analysis due to fundamental information missing and/or obscured. Overall, the methodological transparency and the information on the empirical study designs were often hardly comprehensible or frequently completely missing (Toepper et al., 2021).

Taking a closer look at the empirical research on VET transfer, as found in the literature review in 2021, questions arise as to the evidential quality of the study results, their significance, and their claims to validity. This is especially significant in terms of their particular relevance for evidence-based political and institutional decision-making and actions as well as their impact on the further development of VET systems in the context of increasing internationalization and globalization (Westerhuis, 2008). In addition, evidence-based findings from international VET research, for example, on factors that contribute to or hinder the success of VET transfer, are also of great importance for internationally operating companies. For instance, answers to the following questions are also much more revealing for companies when they are based on evidence from research. 'What do companies in the target countries gain from the VET transfer or is the transfer of certain VET approaches beneficial and feasible from the company's point of view in the target country?'

In accordance with the Standards for Educational and Psychological Testing (AERA, 2014), which are widely established in empirical international educational research, of which VET research is an important part, the quality criterion 'consequences of testing' plays a central role for evidence-based policy decisions. In this regard, a transparent description of the methods used should be considered the minimum (reporting) standard of empirical educational research, also for the field of VET transfer research. This is especially relevant when it corresponds to the international connectivity of the German VET system but also to the transferability of the findings and to evidence-based political and practical decisions.

In this context, this paper systematically describes and analyses the current state of international empirical research on VET transfer by focusing on the following research questions (RQs):

(1) What are the main characteristics of the identified empirical studies in this study field in terms of focus, scope, and design?

(2) What are the most common methodological approaches employed by the studies in this field?

(3) Which common strengths and limitations can be identified in the study designs, methodologies, and their specific applications?

(4) What are the main lessons learned for future research, and which recommendations can be derived from this analysis for more evidence-based policy and practice in VET research and practice?

To answer these questions, the study presented here provides a systematic critical twofold analysis of the evidential quality of recent empirical studies in this field of research. First, the authors developed an integrated evaluation framework based on the evaluation pyramid (Borgetto et al., 2018). Second, they expanded the multilevel taxonomy of quality criteria by the framework 'Quality in Qualitative Evaluation' (Spencer et al., 2003).

In the following, we describe the conceptual foundation and the methodological approach of this analysis (Section 'Conceptual and methodological framework'). To this end, we

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developed a new integrative framework that is based on two established models for assessing the quality of empirical and qualitative research (Section 'Conceptual and methodological framework'). By identifying the strengths and shortcomings of the current international empirical research on VET transfer (Section 'Results'), we point out research desiderata and derive recommendations for future research and evidence-based policy and practice in VET (Section 'Conclusions').

CONCEPTUAL AND METHODOLOGICAL FRAMEWORK

Empirical studies can generally provide evidence for or against the validity of research results and/or assertions of causality. This fundamental idea is also reflected in the internationally established approaches to educational assessment (AERA, 2014; Kane, 2006; Messick, 1994) and is also the basis of evidence-centred designs (Mislevy & Haertel, 2006), which have increasingly and predominantly been used in educational assessment in the last decades (Mislevy et al., 2012). One common denominator of these approaches is that the strength of empirical studies' evidence generally depends on the methodological quality, the quality of implementation, and the quality of their results (AERA, 2014). Another important quality criterion is the consistency and complementarity of the results across studies within the particular research field (Borgetto et al., 2018), which also pertains to the question of international and external validity of research results (Findley et al., 2021).

The analysis of empirical studies on international VET transfer presented here builds on this study, analysing the selected VET studies in terms of their quality of evidence, significance, and claim to validity. As the initial analysis indicates (Toepper et al., 2021), empirical research on international VET transfer predominantly consists of qualitative studies, which commonly use four research methods: interviews, focus groups, observations, and document analyses (see Section 'Results'). Therefore, applying the 'Grading of Recommendations Assessment, Development and Evaluation' (GRADE) taxonomy, which constitutes the 'gold standard' in empirical research in numerous domains (AHCPR, 1992; Guyatt et al., 2011), might not be appropriate without taking into account the dominance of qualitative research in this particular field. Rather, qualitative research needs to be evaluated by considering its typical characteristics as well as premises that are central to its specific purpose and its nature (Spencer et al., 2003).

Hence, for the twofold analysis of the evidential quality of the empirical studies in this field, we developed an integrated evaluation framework for the study presented here. To this end, we conducted a systematic adaptation of existing models to the field of VET research. This integrative approach emphasizes the need for an empirically transparent and standardized approach. In addition, it also meets the demands from this specific research field, that is, the consideration of the dominance of qualitative research.

For this purpose, the multilevel taxonomy of quality criteria, the research pyramid by Borgetto et al. (2018)—a model that is also widely established in empirical educational research (Bromme et al., 2014), therefore also making its adaptation and application to the VET context quite appealing—was expanded by the framework 'Quality in Qualitative Evaluation' (Spencer et al., 2003) to specifically consider the extensive research based on qualitative methods in this field (see Figure 1). The framework by Spencer et al. (2003) was applied, in particular, at the steps of the research pyramid model by Borgetto et al. (2018) that pertain to assessing the quality of a study's implementation and its results. One main advantage of the framework by

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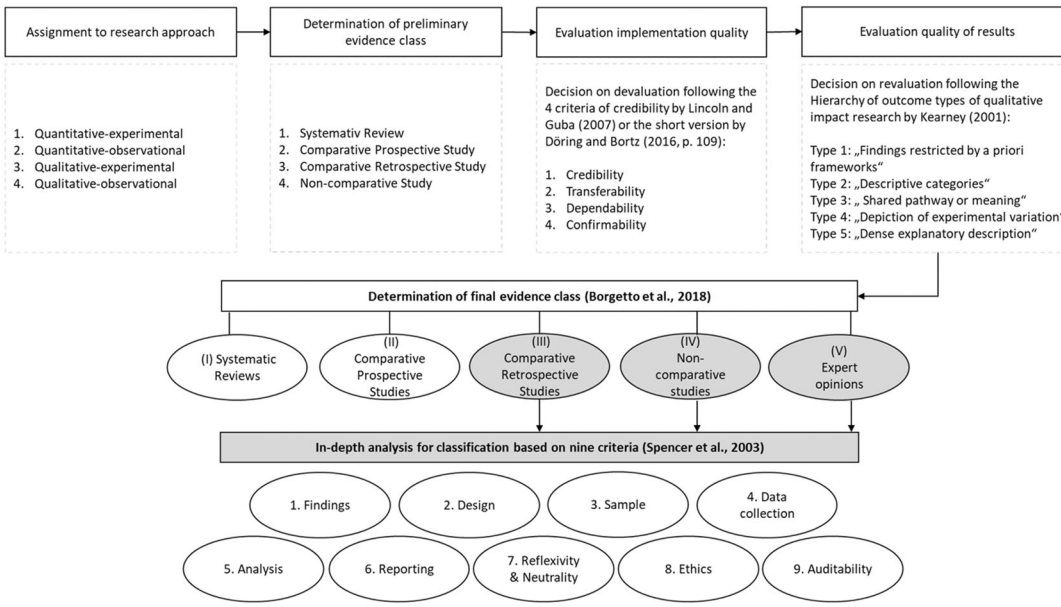

FIGURE 1 The integrated evaluation framework of the quality analysis

Spencer et al. (2003) is that it provides guidelines and specific criteria for assessing the quality of qualitative research studies, including a series of guiding principles and open-ended appraisal questions (for details and examples, see Spencer et al., 2003; p. 71f.) that guide the following analysis of the selected studies (see Figure 1). At the same time, the Spencer et al. (2003) approach does not provide a rating scheme or scoring rubric for a standardized comparative analysis of the evidential quality of the empirical research on VET transfer and their significance. This is why we included the evaluation model by Borgetto et al. (2018) in our integrative approach.

In a previous step, a comprehensive and well-structured review of the literature on international empirical research on VET transfer was conducted (for details, see Toepper et al., 2021). Central relevant literature databases, including ERIC and Google Scholar, were used to ensure a systematic and replicable methodological approach to the review and analysis. The systematic literature search employed the 'snowball technique' to collect additional references from initially identified papers (Waddington et al., 2012). Following the systematic literature review approach by Gessler and Siemer (2020), a total of 331 potentially relevant studies were identified. The studies were checked for duplication and data overlaps, eliminating 100 doublets and leaving 231 studies. Next, their relevance was further assessed based on the abstracts. In this screening, 140 publications were excluded as they did not explicitly address the topic of VET transfer. As a result, 91 studies remained. These articles were further reviewed based on predefined criteria for inclusion or exclusion (e.g., language and year of publication, peer-review process), that is, if a study did not meet these criteria, it was excluded. Based on the full-text analysis in accordance with the predefined selection criteria, 41 studies that proved to be thematically and methodologically relevant were identified and included in the subsequent analysis.

These a priori defined inclusion criteria form the basis for the final selection of the remaining studies. Thus, the studies had to fulfil these criteria to be included in this systematic

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review (see Table 1). In turn, the criteria are also understood as exclusion criteria, that is, if a study did not fulfil these criteria, it was excluded. The language-based criterion was applied since the authors of this review are only fluent in German and English (for limitations, see section 'Conclusions'). In addition, a great amount of research in this field focuses on the transfer of the German dual VET system, which is why this language is particularly important. The time frame of publication of the studies included (2010–2021) was limited since this literature review aimed at being as up-to-date as possible and the interest in the transfer success of VET strategies has increased internationally in recent years. It is a limitation that is very common in literature reviews. In addition, to ensure the quality of the studies analysed, only studies that were scientifically peer-reviewed were considered. This also applies to overlaps between dissertations and related papers. In this case, we referred to journal papers when they included all necessary information on data basis, method, and analysis and had undergone an external review procedure.

The identified studies were further analysed in a three-step procedure: In the first step, the studies were classified into several predefined superordinate categories, such as research objective, research method, sample, participating countries, and central result. International research on VET transfer is based on various theoretical-conceptual and empirical approaches. Consequently, the 41 studies address the topic of VET transfer at various levels, such as transfer processes on a systemic level, transfer from a corporate or entrepreneurial perspective, and/or at a VET-institutional level, and using different methodologies. Therefore, in the second step, we further structured and systemized the studies and their findings, and categorized and classified them according to their methodological approaches. Thereby, we identified 26 studies that dealt with the topic not only at the theoretical-conceptual level but also empirically. In the third step, we analysed these 26 studies in more depth, following our developed integrative framework (see Figure 1) and its evaluation criteria and categories from the research pyramid model (Borgetto et al., 2018) and the model for assessing the quality of qualitative research (Spencer et al., 2003).

To analyse the quality of evidence of results of the 26 studies, the research pyramid model, which was specifically adapted to the context of VET research (Borgetto et al., 2018), enables an initial assessment by a means that is relatively easy to apply and also provides guidance in evaluating the significance of an empirical study as a whole. This assessment comprises four sub-steps (see Figure 1), including the assignment of individual studies to a research approach, the determination of the study type, and, consequently, the corresponding preliminary evidence class. All of these sub-steps of the original model and pyramid were explicitly adapted to the specific context of VET research, and the qualitative research approaches in particular were taken into account.

Overall, the analysis based on the newly developed integrated evaluation framework in this paper also includes in-depth analyses of the research studies with regard to several additional reference criteria and recognized hierarchies, typification, and classifications (see Figure 1). In

TABLE 1 Criteria for a study's inclusion or exclusion

- The study is written either in German or English.
- The study was published between 2010 and 2021.
- The thematic focus of the study is on the transfer of VET systems and/or their elements.
- The study was published in a peer-reviewed journal or book.

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the following, we describe the analysis steps guided by our integrative evaluation framework when assessing the quality of the 26 empirical studies in more detail.

Assignment to a research approach

In the first step of the analysis, each study was assigned to one of the research approaches (see Figure 1). All 26 empirical studies involved nonnumerical data and interpretive analysis and were classified as qualitative research. Furthermore, the research approaches were predominantly classified as qualitative-observational and not qualitative-experimental since the study conditions and/or the object of research were not initiated or treated as would be the case in an experimental study. Moreover, in all 26 empirical studies on VET transfer, the influence of the study conditions on the research object was considered relatively small.

Initial determination of the preliminary evidence class

In the second step, the preliminary assignment to one of the five evidence classes was conducted (see Figure 1). Since Borgetto et al. (2018) initially refer to research methods in the field of medicine, the assignment to evidence classes in other research domains requires specific interpretation (for discussion and limitations, see section 'Conclusions'). Therefore, the evidence classes were used in the same way as in the original pyramid model by Borgetto et al. (2018) and labelled similarly; however, the content and analyses presented here were adapted to the specific context of VET research. Because the first three evidence classes require a study with an intervention and/or control group, all 26 studies had to be assigned to one of the last two evidence classes: Evidence class (IV), 'Non-comparative Studies', was assigned if, for example, internal project partners or stakeholders were interviewed (e.g., training managers or vocational schoolteachers). Evidence class (V), 'Expert Opinions', was assigned to studies that only contained information from external actors and/or external evidence.

Assessment of implementation quality

In the third step, when assessing the quality of implementation, the four criteria of credibility by Lincoln and Guba (1985) were applied to evaluate whether to upgrade or downgrade the previously determined evidence class. Therefore, we analysed for each of the four referring criteria ('Credibility', 'Transferability', 'Dependability', and 'Confirmability'; an abridged version was used here, see Döring & Bortz, 2016) whether it was more likely to be fulfilled or more likely not to be fulfilled in an individual empirical study. In consequence, the evidence class was downgraded if more than half of the four criteria of credibility tended not to be fulfilled and vice versa.

Evaluation of the quality of results

In the fourth step, based on the evaluation of the implementation quality, we assessed whether each study could be classified into a higher evidence class. For this purpose, a hierarchy of outcome types of qualitative impact research (Kearney, 2001; Figure 1) was used. For instance, for an upgrade in evidence class, the replicability of the results of qualitative research is especially important (Borgetto et al., 2018, p. 11). Therefore, results in the sense of Type 1 in combination with the characteristics of Type 4 or Type 5 (see Figure 1) could lead to the upgrading of a qualitative study due to the high quality of the results. In this context, two of the 26 studies could be upgraded from their preliminary evidence class IV ('Non-comparative Study') to evidence class III ('Comparative Retrospective Study') due to the high quality of the study results (see Table 6). In these two studies, predeveloped conceptual frameworks were further developed (Type 1) and combined with evidence gained on the levels of individual persons, countries, companies, and

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so forth (Type 4). Furthermore, precise and detailed elaboration of the cultural contexts of the participating persons, comprehensive description of limitations, evaluation based on theoretical concepts, and the perceived objectivity of the participants were taken into account.

Final evidence class

After evaluating whether to downgrade or upgrade the preliminary evidence class, a final evidence class was determined conclusively. After analysing each study and performing the steps described above, bullet point notes were made about the study in case it needed to be revisited at a later time. In particular, ambiguous cases were marked to be discussed with the whole research team and eventually revisited.

In-depth quality analysis

In the next step, a more in-depth analysis of the *quality of implementation* and *quality of results* was conducted based on the guidelines and criteria for assessing the quality of qualitative research (Spencer et al., 2003). Thereby, we called on Spencer et al.'s (2003) nine categories as quality indicators and summarized them in an abbreviated manner according to the specific demands of this field of research. The summarized criteria for each category are listed in Figure 2. Based on these criteria, all 26 studies were rated with reference to the nine categories, with (1) meaning criteria are rather not fulfilled, (2) meaning criteria are partially fulfilled or (3) meaning criteria are largely fulfilled. Using the scoring schemes for all analysis categories, the 26 studies were first considered and rated individually. In a further step, sum

FIGURE 2 Nine categories and abbreviated criteria based on Spencer et al. (2003, p. 22)

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scores and mean values were calculated based on the individual values of the 26 studies per category (see Table 7). In the scoring process, the individual categories were weighted, for example, categories 'Design' & 'Sample' and 'Analysis' & 'Findings' were weighted higher than 'Ethics' or 'Auditability'. Based on these analyses, more general statements that are true across these studies were made (see section 'Conclusions'). The results of this in-depth analysis of the quality of the studies and their results provide further arguments for (or against) the internal and/or external validity of each study (Findley et al., 2021), potentially assigning it to a higher or lower evidence class, for instance, due to the high or low quality of the results.

To increase the objectivity of evaluation in our study, the (estimated) replicability of results of qualitative studies was also considered in the classification of the quality of results (Borgetto et al., 2018). In these analyses, internationally established indicators such as citation indices (e.g., in Research Gate and Google Scholar) were used.

RESULTS

In the following, we present an overview of the key findings of our analyses pertaining to the first three research questions.

RQ1: What are the main characteristics of the identified empirical studies in this study field in terms of focus, scope, and design?

The 26 empirical studies represent a cross-sectional overview of the current international state of empirical research on VET transfer. These studies are very heterogeneous regarding their research focus and aim. Most of these studies focus on the analysis of international VET transfer from German companies to other countries ($n = 9$). In about a quarter of the studies, the process of VET transfer is analysed in more detail, identifying the main success and inhibiting factors ($n = 7$). Other studies focus on analysing the transfer of competency-based approaches ($n = 2$), evaluation of dual VET systems and feasibility abroad ($n = 3$), country-specific analyses ($n = 2$), the development of partnerships in the context of VET transfer ($n = 1$), comparisons to an original VET system ($n = 1$) and effects on unemployment rates ($n = 1$). Among these 26 studies, the high cultural and also linguistic/lexical diversity and heterogeneity became evident.

Most of the 26 studies have a European and especially a German perspective: 22 of the 26 studies included German VET in their analyses. Furthermore, the Asian ($n = 20$) and North American ($n = 7$) countries are relatively well represented. South America ($n = 5$), Africa ($n = 5$), and Australia ($n = 1$) are less represented. Overall, the vast majority of studies analyse the transfer of the German VET system to numerous countries (18) and 6 continents.

Most studies considered two countries ($n = 10$), and in all studies, Germany was included as a reference country. Two studies included three countries in their analyses and six focused on four countries. More than five countries were analysed within four studies. Even when several countries are involved, the studies are case studies without an explicit comparative analysis between countries.

Four studies focused on one country. Two of these studies focused on Germany and examine VET transfer from Germany to other countries. Their focus is on identifying and analysing the main success and inhibiting factors for a VET transfer process. The other two studies focused on a detailed analysis of the development of partnerships in the context of VET transfer and on the analysis of a competency-based approach.

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Across all 26 studies, 1,174 participants were interviewed; and 380 companies, 13 schools, and 228 institutions, such as private education and training providers, were involved. Nine studies included fewer than 10 institutions and 8 included more than 35 institutions. Four studies did not report a sample description. This is true for both studies that focused on the research aim 'Analysing transfer of a competency-based approach'. For some studies ($n = 11$), not all required information regarding the number of participants, the number of institutions, and so forth was given. In six studies, the number of participants was reported, but the specific number of institutions or facilities involved was not provided or not specified clearly. Seven studies described how many institutions were part of the study but did not report how many participants were surveyed. Based on the information provided in the studies, no study had a longitudinal design. Table 2 provides an overview of the samples of all 26 studies, indicating that the obtained evidence is mostly based on data from companies.

Looking at the samples of the 26 studies in terms of how many countries were included, it is evident that more vocational schools were observed ($n = 11$) when VET transfer was analysed with two or less countries; that is, the focus of the analysis tended to be more on vocational schools when two countries were examined. Studies on VET transfer which involved two countries mainly focused on vocational schools. When more countries were analysed, the focus of the transfer analysis shifts to companies. In those studies on the international transfer of VET research that included multiple countries, companies and institutions, such as private education and training providers, were predominantly considered (Table 3).

Differentiating between both the sample size and research aims of the studies, it becomes evident that most of the participants were surveyed in studies focusing on 'Analysis of international VET transfer by German companies'. The studies primarily surveyed companies rather than training providers or vocational schools, so the focus here is predominantly on the companies' perspectives. Studies focusing on the 'Analysis of the VET-transfer process' mainly surveyed vocational training providers over companies and schools. In analysing the success and inhibiting factors, the studies primarily focused on various vocational training providers, whereas companies were rarely taken into account. Looking at the other research aims, very few respondents took part in the studies, and little information was provided in the studies about the participants and institutions surveyed. The studies with the aim of evaluating the dual VET system abroad included the lowest number of participants.

Overall, the largest research effort on the transfer of VET was seemingly conducted in the context of German companies abroad. The international VET transfer by German companies thus seems to be well researched. Other areas and perspectives of VET transfer have received less research interest thus far. For example, vocational schools have been considered both much less and less frequently in the analysis of VET transfer. These and other areas, such as

TABLE 2 Overview of sample sizes of the 26 studies in total and by number of countries involved

	Participants	Companies	Schools	Vocational training providers and others
Total numbers (across all 26 studies)	1,174	380	13	228
One country involved ($n = 5$)	265	6	—	—
Two involved ($n = 10$)	218	57	11	—
Three or more countries involved ($n = 11$)	691	317	2	64

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TABLE 3 Overview of sample size by research aim

	Participants	Companies	Schools	Vocational training providers, chambers of commerce, and others
Analysis of international VET transfer by German companies ($n = 9$)	601	314	2	59
Analysis of the international VET-transfer process: success factors/inhibiting factors ($n = 7$)	270	15	4	169
Evaluation of dual VET systems and feasibility abroad ($n = 3$)	32	3	—	—
Analysing transfer of a competency-based approach ($n = 2$)	19[a]	—	—	—
Other research aims (e.g., development of partnerships between sectors; $n = 5$)	252	48	7	—

[a]The information in one study was not clear, so the exact number of participants cannot be specified. They were at least 19.

'Evaluation of dual VET systems and feasibility abroad', require more research with larger and more representative sample sizes and more measurement points (longitudinal studies).

The German focus on and the apparent surplus of German research studies dealing with German companies and their transfer activities abroad show Germany's great interest in transferring parts of its vocational training system to other countries, or in transferring structures established in German companies to foreign branches and subsidiaries. This interest is both politically desired and promoted by means of corresponding grants and funding initiatives as well as forced by cross-national companies that, for example, produce abroad. One consequence of this focus is a certain dominance of the German perspective and a less prominent view of the perspective of the 'recipient countries' of the transfer activities. This apparent imbalance of findings might be also due to the fact that, in addition to publications in English, all identified relevant German publications were included in this analysis, while studies published in languages other than German and English were not considered. Nevertheless, the studies that were analysed in the first review in 2021 (Toepper et al., 2021) also show the need for further research to include the perspective of the recipient country, to consider the sociocultural conditions of vocational training in the target country and to manifest cooperation on an equal basis.

RQ2: What are the most common methodological approaches employed by the studies in this field?

All empirical studies used predominantly qualitative research approaches to investigate their various research questions. Most studies were based on a qualitative-observational design. The methods used range from interviews, case studies, and observations to document analyses, questionnaires, and group discussions (see Table 4).

Most studies ($n = 12$) used one method. The most frequently used method was interview; 22 of the 26 studies used interviews, including individual interviews, group interviews, and expert interviews. Only one study used a questionnaire. Studies that used two methods always used interviews and either documents or observations. Five studies integrated interviews,

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TABLE 4 Overview of methods used in 26 empricial studies (multiple entries possible)

	Interviews	Documents	Observation	Questionnaire	Sum
Total numbers (across all 26 studies)	923	1,444	33	1	
One method	9	1	1	1	12
Two methods	8	4	4		8
Three methods	5	5	5		5
Sum	22	10	10	1	

TABLE 5 Overview of methods used regarding research aim (multiple entries possible)

	Interviews	Documents	Observation	Questionnaire
Total numbers (across all 26 studies)	923	1,444	33	1
International VET transfer by German companies	603	167 (1)	31 (1)	0
International VET process	126 (2)	0 (4)	2 (2)	1
Evaluation of dual VET systems	57 (2)			
Transfer of competency-based approach	19	1,277		
Other research aims (e.g., development of partnerships between sectors)	118 (1)	(1)	(2)	

Note: The number in brackets indicates the number of studies that mentioned these methods in their study but did not specify them.

documents, and observations. One study did not describe the method at all. There is also a great range in sample size, depending on the methods used and the research focus (Table 5). Studies that entailed interviews had the highest number of participants, and the lowest number of participants were reported in studies that entailed site visits.

Differentiating between both the methods used and the research aims of the studies, it becomes evident that interviews were the main instruments used to analyse 'international VET transfer by German companies' ($n = 9$). Each of these studies used interviews, six studies only used interviews. Only one study also analysed documents related to VET transfer from Germany, and another study used observation in addition. The analysis of the 'international VET-transfer process (success factors and inhibiting factors)' displayed more diverse methodological approaches. One study used a questionnaire. Two studies included interviews and documents, another two included interviews and observations, and two other studies incorporated three methods (interviews, document analysis, and observation). Many studies provided information regarding the methods mentioned but did not specify them, for example, information on the number of documents analysed is missing. The research focus on 'evaluation of dual VET systems and feasibility abroad' was also rather methodologically diversified. One study used observation and another interview. One study used all three methods (interviews, observation, and document analysis), but also did not specify the number and scope of analysed documents, subjects, and institutions. Studies that could not be assigned to overarching research focus predominantly used interviews. One study additionally used

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document analysis and another used observation. Another study used all three methods (interview, documents, and observations), but did not describe them.

Regarding the interviewing method, 20 participants or less were interviewed in six studies, in seven studies between 30 and 50 participants were interviewed, and in three studies more than 90 were interviewed. Most studies did not provide precise information on the description of the sample, and hardly any studies provided information on the representativeness of the sample. In view of the information provided, in most of the studies, occasional samples were collected, which are less representative.

Due to the partly limited information presented in the 26 empirical studies regarding the selected interview partners, the individual role and understandings of the interviewees and further framework conditions of the interview settings, only limited conclusions about the consequences of the methods used can be drawn at this point. It is important to keep these limitations in mind when interpreting the research results from interview studies. In this regard, a critical-reflective interpretation and also classification of the findings is required, taking into account possible biases, for example, due to (biased) selection of interview partners. Social or institutional role understandings, interaction effects during the interview situations, ambivalent hierarchy relations etc. are also influencing factors that are relevant in interviews and which should be taken into account when interpreting the results. The identified predominant focus on interviews in the VET research field would definitely benefit from a more variety of complementing methods, and more methodological diversity would be important to provide more valid research outcomes in this field in the future.

RQ3: Which common strengths and limitations can be identified in the study designs, methodologies, and their specific applications?

In the more in-depth analysis, we initially identified the corresponding evidence class for each study. At this stage of the analysis, all studies were classified at a rather low level of evidence (see section 'Results', Table 6 preliminary evidence class). After the preliminary evidence class was determined, the studies were then analysed in more detail in terms of their study design and implementation quality. The in-depth analyses indicated that four studies needed to be downgraded (Table 6), two studies needed to be upgraded and the remaining kept their evidence class ($n = 16$). As a result, two studies achieved evidence class III; eight studies were assigned to evidence class V and the remaining were in class IV ($n = 16$).

In the next analysis step, we especially considered the specifics of qualitative methods applied in this VET research in more detail. In qualitative research, it is also crucial for the replicability of a study to provide a detailed description of the design, the method, the

TABLE 6 Overview of the study assignments to the evidence classes

Classification to the research approaches		Determination of the preliminary evidence class		Final evidence class	
Qualitative-observational	24	(IV) Non-comparative study	22	(III) Comparative retrospective study	2
Qualitative-experimental	2	(V) Expert opinions	4	(IV) Non-comparative study	16
				(V) Expert opinions	8
Sum	26	Sum	26	Sum	26

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TABLE 7 Summary of in-depth qualitative analysis

	Findings	Design	Sample	Data collection	Analysis	Reporting	Reflexivity and neutrality	Ethics	Auditability
Sum	67/78	55/78	54/78	57/78	60/78	76/78	54/78	29/78	41/78
Average	2.48	2.04	2.0	2.11	2.22	2.81	2.0	1.07	1.52

instrument, the sample, and the analyses performed. In the more in-depth analysis of the quality of the studies, it became evident that most studies report their results in an academically appropriate manner with adequate interpretations (see Table 7). For categories that overlap, such as findings and reporting, the information provided in the studies was considered for both categories. Table 7 shows the total scores and the average score for all 26 studies considered. The maximum score is 78 points. The higher the value, the better the category is fulfilled. Overall, the study results were usually presented in a clearly structured manner. This can be seen as a major strength of the research, as the studies were assessed best with 67/78 points. The interpretation of the findings and the related critical discussion of them were evaluated positively as well. In contrast, the study designs (55/78) and the samples could only be evaluated to a limited extent, as many studies ($n = 13$) did not provide sufficient information in the description of their samples, methods, and instruments. For the purpose of comprehensibility and replicability of studies, this is a substantial weakness.

With particular reference to Spencer et al.'s (2003) nine criteria, the studies least fulfil the criteria of 'auditability' because of this criterion's close relation to sample description, which, as mentioned above, was often deficient. Concerning the 'ethics' criterion, despite shortcomings in most studies in providing information on ethical issues, the study participants and reported analyses were anonymous. Since our study placed particular focus on the quality of methodology and analyses, other criteria like ethics were evaluated and weighted less heavily.

CONCLUSIONS

Critical discussion

The results of the analyses presented in this paper not only provide a structured overview of the current state of research on VET transfer but especially examine the recent empirical studies in great depth, analysing the quality of their design, methods, and results based on our newly developed integrative evaluation framework.

Referring to our fourth research question (RQ4), '*What are the main lessons learned for future research, and which recommendations for more evidence-based policy and practice can be derived from this analysis?*', the following conclusions can be drawn from our analyses.

One key finding of our study indicates that empirical research in this field predominantly uses qualitative study designs to generate knowledge that is and can be used for evidence-based policy and practice (Dymock et al., 2009; Westerhuis, 2008). The high prevalence of qualitative studies in this study field could be due to the specific characteristics of the research object 'transfer of VET'. For instance, most theoretical models focus on the description of different phases of a (successful) transfer process. Based on these models, most empirical studies also

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follow a qualitative descriptive analytical approach. Moreover, it also lies in the nature of the research subject that each transfer process can only be described in its respective specific regional and company context. Consequently, most studies focus on the description of transfer processes in the context of a (multinational) company or a specific region. Considering, for example, the implementation approaches at the company level analysed in the studies, the focus here was predominantly on the description of institutional framework conditions and curricula, which can be carried out only to a limited extent by using quantitative methods. With regard to the success factors identified at the operational level, one particular focus in the studies was placed on communication processes between different actors, their respective subjective perceptions and beliefs, and cooperation between all actors involved. These are also factors and processes that can hardly be described by means of quantitative approaches.

Another specific feature of the studies in transfer research is that the transfer processes are mainly conducted by the actors involved on-site. Accordingly, most studies are based on the observations and interviews of these actors. Therefore, researchers often have access to only a small number of actors involved in transfer processes whom they can survey or interview. This specific field of research thus makes broader quantitative studies (with a larger sample size) hardly feasible.

At the same time, for an appropriate interpretation of the findings, it is crucial to precisely describe these actors in a comprehensive and differentiated manner. However, this information is deficient in most studies of this study field, which often makes it almost impossible to (externally) assess the results and thus limits the added value of these studies for research and practice decisively. Our analyses determined a general limitation in this study field: A significant number of the studies screened during this analysis did not provide sufficient fundamental information as would be expected of any research publication, that is, precise descriptions of the research methods and procedures used, sample descriptions, materials, and evaluation approaches. This limitation indicates that higher compliance with research quality and reporting standards needs to be ensured for the future publication of research results in this area. This is also a necessary prerequisite to ensure a stronger connectivity of studies to the current state of research as well as replicability of the findings (Findley et al., 2021). A greater emphasis should be placed to these requirements in future research in this field.

Overall, the practical implementation of VET transfer is a highly complex and long-lasting process, the description of which initially requires qualitative approaches (Caves et al., 2021). At the same time, however, the primary interest of most funders of transfer research (and of political and practical stakeholders) is to obtain empirically validated findings to explain successful transfer processes and to identify key influencing factors that can have a decisive impact on them (Schemme et al., 2017; Westerhuis, 2008). Thus, funders and stakeholders in this study field need (and expect) insights into effect mechanisms and causality, which is where qualitative research and its results generally reach their limits (Falk & Guenther, 2006). Since the results of this study are often used as a basis for transfer decisions, this aspect should gain particular importance in future research.

At this point, particular attention needs to be paid to the replicability of the results of qualitative studies. Qualitative research methods, for example, using case studies as a research approach, are not without controversy, and their representativeness and generalizability are often challenged and limited (Hildenbrand, 1991; Simons, 2009; Smith, 2000). In addition, there is a concern that case studies often show a certain inaccuracy and lack of objectivity (Rowley, 2002; Yin, 2009).

In summary, while the need for qualitative approaches in this study field is evident, the limitations of these research approaches and the resulting findings must be considered more

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systematically. In addition, longitudinal studies with multiple observations and measurements, which are hardly available thus far, are urgently required, especially for investigating effect mechanisms and causal relationships—aspects that are especially important for political and practical actors in this field (Cameron, 2010).

More specifically, the analyses of the empirical study results reveal that both positive and negative influences can be identified in the context of VET transfer (Toepper et al., 2021). The research thus identifies influencing factors for a successful transfer process that, in turn, may prove useful for political and practical actors (Dymock et al., 2009; Westerhuis, 2008). Derived from the described (successful) implementation approaches and their influencing factors, the researchers usually conclude recommendations for future projects (Toepper et al., 2021). The studies in transfer research are therefore characterized specifically by the fact that they derive practical implications for VET practice and transfer from the findings. Also due to the extreme contextual specificity of the findings, it is crucial to make this specificity and limitation of transfer research very clear and transparent to the recipients of this study. This applies to both the countries, institutions, and actors involved in these studies—for instance, who change the conditions on the basis of the results of (internal) transfer evaluation—and other interested actors who may also base their transfer decisions on these (external) studies and results (Gessler et al., 2020; Pilz & Li, 2020). It should be considered that the studies in this field often do not allow for generalizable conclusions for practice and policy (Falk & Guenther, 2006).

Overall, this critical twofold analysis of the current studies indicates that while there is extensive research on VET transfer being done internationally, much of it so far is characterized by qualitative designs and methods, so that more methodological diversity would be important in this field in the future to provide more valid research outcomes. Especially with regard to the analysis of transfer processes over longer periods of time as well as transfer effects, studies with longitudinal designs are required, which can also provide such important causality indications, especially for VET practice and policy.

Limitations

When further interpreting the results of our study, however, a number of limitations need to be considered. Although our analysis is guided by established research quality standards focusing on objectivity, reliability, and validity to ensure a methodologically sound approach, it cannot be ruled out that some relevant studies were not found and included. Although the systematic search approach of the 'snowball technique' using several keyword combinations in different databases reduced the likelihood that relevant studies were overlooked (Waddington et al., 2012), there is still a risk that some relevant publications were not included in the present review, especially as only papers published in English and German were included. In the initial data set, all forms of publications concerning VET transfer were included, together with the so-called 'incoming studies' from targeted countries. However, based on the defined criteria for inclusion and exclusion as well as the selected languages (German and English) (see Table 1), the related publications in other languages were not included in the analysis presented here. This might also explain why a clear European focus and, in particular, the German perspective was found predominantly in our literature search. For further analysis, publications in other languages, such as Spanish, Portuguese, and French, should be included.

Furthermore, the objectivity of the present review might be biased as both the choice of databases and the formulation of the criteria for inclusion/exclusion were based on the

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individual perspective of the authors. The same applies to the definition of the keywords and keyword combinations and the literature search itself. For future research, the objectivity of the work may be increased by involving external experts from the same and closely related research disciplines in the process, especially when determining the search terms (Klatt, 2019).

The use of the nine categories of the Spencer et al. (2003) scheme is another aspect to be regarded critically. The categories are comparative and a meaningful well-balanced weighting is needed to determine which categories are more relevant for which specific type of research studies and therefore should be weighted more than others. A simple 1:1 application of all categories to the studies without weighting and reference to the research objective and the method of the study would be less appropriate, especially for qualitative empirical research. Therefore, the individual categories are of varying relevance for the evaluation of the individual studies. Consequently, the individual categories were considered separately or weighted according to their relevance to a specific study, resulting in some subjectivity in the evaluation process in the review presented here. For instance, it cannot be ruled out that some important aspects may have been given too little importance while less important aspects might be weighted too highly.

Implications

Our systematic literature review reveals that the vast majority of studies in transfer research are based on an investigation of a recipient country or company. Consequently, research in this area is primarily based on individual case studies. Thus, the majority of studies are based on the methodological approach case study, which is viewed critically in the research community. In particular, its representativeness and the generalizability of results are severely limited (Rowley, 2002; Yin, 2009). At the same time, case studies provide deep insights into specific transfer processes and their contexts, allowing them to deliver results that are close to reality and practice (Smith, 2000). Since these findings are often seen as the foundation for subsequent implications for practice and/or policy, a very precise communication and reporting standards of the specific strengths and limitations in this field of research is required (Falk & Guenther, 2006; Findley et al., 2021; Westerhuis, 2008) but falls short in many studies so far.

This case study orientation greatly reduces the comparability of the studies and their results, which significantly restricts the necessary consolidation in this study field and, for example, makes an overarching analysis of the results, as per a traditional meta-analysis (Schmidt & Hunter, 2015), almost impossible (Smith, 2000). In view of the thus far predominant case study methodology, it would also be important that future research activities, with their studies, are increasingly applying a comparative approach, which analyses the transfer of vocational training in different countries and/or companies comparatively.

For future research, especially if the derivation of generalizable or comparative conclusions is intended—which was not a particular focus of the present review— more strict and stringent quality and reporting standards for evidence-based design are required than it is the case for individual studies in this field of research (Clarke et al., 2021; Falk & Guenther, 2006; Findley et al., 2021). With regard to the earlier postulated desire for more transparency and replicability of (qualitative) empirical research, especially in VET research, a pluralism of methods for answering diverse research questions should be pursued in the future (Cameron, 2010). This concerns in particular the expansion to longitudinal studies as well as multilevel modelling that can adequately account for effects at the various actor, institutional, and country levels. In particular, the high interdisciplinarity of international VET research provides both great added

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value and potential that can help to ensure that various research approaches and methods can also be combined and used to shed light on more complex issues and research questions, such as mid- and long-term transfer effects at different actor, institution and country levels.

Despite the described limitations in this field of research, the central gain in knowledge and the great added value for practice must be emphasized, as a comprehensive overview of the central strategies and implementation approaches in the transfer of VET as well as their central conditions for success at the different levels of analysis is provided, which offers important insights for VET practitioners. For instance, the review of the empirical studies on transfer in VET in 2021 (Toepper et al., 2021) also revealed important insights into how a transfer process can succeed, for example, various factors influencing the transfer of VET elements to other contexts, and how the different perspectives of the donor and recipient countries should be taken into account. A change of perspectives of the parties involved and communication are considered central when it comes to transfer in VET. Therefore, constant communication is necessary to prevent misunderstandings and conflicts of interest. According to numerous reviewed studies, knowledge of the contextual conditions and the resulting adaptation to the conditions in the target country is a prerequisite for a successful implementation of VET elements (Bliem et al., 2014; Fraunhofer MOEZ, 2012; Peters, 2019; Pfaffe, 2019). This is consistent with the conceptual notion that transfer must be a process of adaptation and adjustment. Furthermore, close cooperation between the involved parties is stated as an important foundation for successful VET transfer (Aring, 2014; Gessler et al., 2019). A reliable basis of trust between the participants can be established through constant exchange (Peters, 2019). This relationship-building is not limited to bilateral cooperation between national and international partners. All stakeholders involved should cooperate closely with each other and develop a similar understanding of as well as trust in the intended transfer project. In addition, knowledge of how the relevant VET system works has a significant impact on the success of the transfer process (Pilz & Wiemann, 2021). Here, the participation of trained and experienced expatriates or trainers, especially at the beginning of the transfer activities, constitutes a positive influencing factor for successful transfer (Körbel et al., 2017). Overall, the knowledge created about essential contextual conditions on the individual, company, and systemic level in the context of VET transfer offers numerous starting points for future VET practice to make VET transfer more successful and to enable successful VET across borders.

ACKNOWLEDGMENT

We would like to thank the anonymous reviewers and the editor for providing constructive feedback and helpful guidance in the revision of this paper. Open Access funding enabled and organized by Projekt DEAL.

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How to cite this article: Toepper, M., Zlatkin-Troitschanskaia, O., & Kühling-Thees, C. (2022). Literature review of international empirical research on transfer of vocational education and training. *International Journal of Training and Development*, 26, 686–708. https://doi.org/10.1111/ijtd.12276

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