Fostering Democratic Learning Experiences with Intercultural Virtual Problem-based Learning

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Democratic learning; Intercultural competence; Problem-based Learning; Online learning; Teacher training;

Abbreviations

Problem-based Learning= PBL

Abstract

This article documents a cooperation project between a German and an Austrian university. Teacher training students from both countries collaborated in binational groups on intercultural case studies using the method of Problem-based learning. The international collaboration was made possible by digital media (especially video conferencing software). In this pilot study, Reitinger's Criteria of Inquiry Learning Inventory (CILI) was used to investigate the extent to which students perceived the learning activity as democratic one. The results show that this was the case overall, but that further adjustments are needed to fully realise the democratic potential of the learning unit.

German Synopsis

Dieser Beitrag erläutert die konzeptionellen Grundideen eines einmonatigen Kooperationsprojekts, das im Wintersemester 2017/18 erstmals an der Universität Trier und der PH der Diözese Linz stattgefunden hat und dokumentiert die Ergebnisse der Evaluation, die untersuchte, inwiefern das Projekt von den teilnehmenden Studierenden als demokratische Lernerfahrung wahrgenommen wurde.

Im Rahmen des Projekts bearbeiteten Lehramtsstudierende beider Länder in digitaler Gruppenarbeit Fallgeschichten, die von interkulturellen Konflikten im Schulkontext handeln. Die Kommunikation über Landesgrenzen hinweg vollzieht sich dabei unter Zuhilfenahme virtueller Kollaborationstools, vor allem von Videokonferenzsoftware. Das Projekt verbindet auf diese Weise digitales Lernen mit interkulturellem Lernen. Die innerhalb der virtuellen Kooperation eingesetzte Lehr-Lernmethode ist das problembasierte Lernen (PBL). Die Rolle der für PBL charakteristischen Problemfallgeschichte nehmen in diesem Design sogenannte Critical Incidents aus dem interkulturellen Lernen ein.

In dieser Pilotstudie sollte zunächst ermittelt werden, ob das Projekt, das sich in Ablauf und Inhalt als Beitrag zum demokratischen Lernen versteht, von den Studierenden selbst als demokratisch wahrgenommen wurde. Vor diesem Hintergrund fanden während der insgesamt vier virtuellen Sitzungen jeweils Befragungen unter Verwendung des Criteria of Inquiry Learning Inventory (CILI) von Reitinger statt. Die Auswertung der Daten ergab, dass das Projekt insgesamt von den Studierenden als demokratische Lerneinheit wahrgenommen wurde, diese Zustimmung aber über die Messzeitpunkte nachließ. Mögliche Gründe und Implikationen werden diskutiert.

Introduction

In various countries of the world, an increase in populist, anti-democratic currents can currently be observed. Even in countries where the democratic institutions themselves seem to have enough resistance against such forces, this trend is to be seen with concern if democracy is not simply understood as a form of rule, but – with John Dewey (1916) - rather as a form of common and interconnected shared experience. This form of interconnection seems at present to be in danger with a fragmentation of society along different groups in which no common experience seems to take place anymore. For some time now, the promotion of intercultural competence in the population has been regarded as a way of preventing at least a break-up of society along cultural lines, especially amongst the younger generation in the country's educational institutions. This approach also creates new demands on university teacher training. This pilot study explores the democratic potential of a cross-border cooperation project on intercultural competence that also incorporated new ways of digital learning and made use of the method of Problem-based learning.

Theoretical Background

Intercultural Competence

The concept of intercultural competence has been used more and more in recent years, in line with current social developments as

> more than ever, within our communities we find people living side-by-side who hold different beliefs, backgrounds and outlooks. This enriching of European societies is to be celebrated, but it also requires us to think carefully about how we nurture a set of common values around which to organise. How do we resolve clashes between competing worldviews? What are the attitudes and behaviours we can and cannot accept? (Council of Europe, 2016)

The concept is regarded by many as particularly relevant for educational institutions, as can be seen from various official announcements.

For example, in its recommendation on "Intercultural education and upbringing in schools", the Standing Staff of Conference of the Ministries of Culture Affairs (KMK, 1996) describes "intercultural competence" as a core competence for responsible action in a plural, globally networked society, and the National Action Plan for Integration (BMBF, 2013) emphasises the importance of an intercultural opening of higher education institutions.

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Nevertheless, the concept of intercultural competence has always been criticised as well. Due to its strong anchoring – at least in the early days – in economics, research has in fact provided a large surface for criticism in view of its focus on functional recipe knowledge (one may think in this context of the popular formulation of "intercultural training"). However, much more dynamic and open conceptions of intercultural competence were also subject to criticism. The argument is that it fixes people on their ethnic origin and their community of descent and locates discrimination and racism above all on the (inter-)personal level, thus concealing their institutional conditions.

Furthermore, from another thrust there is criticism of the alleged inaccuracy and contradictoriness of the basic concepts of culture, interculturality and intercultural competence (Radke, 1992).

Research on intercultural competence is therefore faced with the task of taking into account the fluidity and hybridity of culture on the one hand and, on the other hand, of moving from a – self-acknowledged (Bolten, 2007) – situation of conceptual confusion to definitional clarity in order to be able to fulfil the demands and expectations placed on it.

It is evident that the above-mentioned teaching of intercultural competence at school, which is demanded by state authorities, is only possible if the teachers also possess this competence. For example, the KMK calls for further training of educators and teachers and for the strengthening of the intercultural competences of the pedagogical staff.

The necessity of such a strengthening of intercultural competence can be deduced from the results of various studies in which the intercultural attitudes of teachers were determined (Busse & Göbel, 2017). The importance of attitudes is an important element in most definitions of intercultural competence, including that of Deardorff (2006, p. 247), which served as the basis for the project presented here:

> "The ability to act effectively and appropriately in intercultural situations; it is promoted by certain attitudes, emotional aspects, (inter)cultural   knowledge, special skills and abilities as well as general reflection competence".

In their mentioned compilation of various studies, however, Busse and Göbel have shown that teachers often tend towards ethnocentric perspectives and either minimize or deny cultural differences or adopt a defensive attitude towards them. This is all the more impactful because there is a connection between the intercultural attitudes of the teacher and the intercultural quality of his or her teaching. Positive attitudes towards interculturality are therefore desirable, but are often not automatically present (Göbel & Hesse, 2008).

As far as the promotion of such attitudes is concerned, literature shows that experiences of real cultural contacts can help to reduce stereotypes (Pettigrew & Tropp, 2006) and that teachers who themselves have lived abroad for a longer period of time are more likely to show ethnorelative attitudes than colleagues who have not (Lee, 2009).

Reflective activities contribute to the productive handling of such experiences of cultural contact and prevent them from being processed in the form of solidified stereotypes. Results from foreign language didactics point to the suitability of working with critical incidents in this context (Göbel & Helmke, 2010).

In the online project presented in this article, an attempt was made to generate the positive effects of cultural contact through a bi-national setting and at the same time to enable a reflexive approach to the topic through the use of critical incidents in order to strengthen the intercultural competence of future teachers. Such a strengthening is not only desirable due to democratic and inclusion-theoretical considerations, but in view of the study situation it can also be expected that the learning performance of pupils with a migration background will increase (Busse & Göbel, 2017).

Digitization

Digitization, understood here as a process in which digital media and digital tools increasingly take the place of analog processes and not only replace them, but also open up new perspectives in all social, economic and scientific areas, but also bring with them new challenges (KMK, 2016), is also and above all of great importance for the educational system. In this context, Germany's oft-quoted backwardness in international comparison has frequently been the subject of discussion (IW, 2018) and taken by politicians as an occasion for extensive investment (BMBF, 2017). Two main points serve as reasons for this digital turnaround. On the one hand, school has to prepare the pupils for the reality of life and – since this reality is an increasingly digital one – also incorporate digital media itself in order not to develop into a parallel space to the pupils' environment (Brinkmann et al., 2018). On the other hand, digitization opens up great opportunities for better, more meaningful and more sustainable learning, both on the individual learning side (Deimann, 2016) and on the collaborative learning side (Knaus, 2015).

In addition to problems of financing and infrastructure, teachers and their below-average digital competence have repeatedly come under fire in the discussion as an obstacle to the realisation of modern, digital classes (Vodafone Stiftung Deutschland, 2017). Other studies

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have shown that this situation will not simply change with the entry of a new generation into the teaching profession, since students generally cannot be identified as drivers of digital change and students of teaching professions are even less digitally affine than their peers (Schmid et. al., 2017). It is therefore called for a fundamental modification of teacher training and a comprehensive orientation towards the acquisition of digital skills by future teachers (Brinkmann, 2018). This focus seems to be reasonable because studies based on the *Technology Acceptance Model* by Davis et al. (1989) have shown that the successful use of new technologies in the classroom strongly depends on the attitudes and views of teachers towards them (Paraskeva & Papagianna, 2008). The online project presented here is an attempt to positively influence these attitudes and views through a model experience of the possibilities of digital learning.

Problem-based Learning

The literature on PBL is diverse and different authors often accentuate different elements. For the online project and this study, we were guided by Savery's (2006, p. 9) definition of PBL as a "learner-centered approach that empowers learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem."

Foundations

The confrontation with problems and the attempt to overcome them successfully is a basic constant of human experience.

The philosophical-theoretical foundations of PBL can be found above all in the approach of John Dewey's inquiry method (Dole et al., 2016). In contrast to a mere artificial instruction, the method is intended to represent the principle of thinking itself. Five phases are regarded as characteristic for this process, which can also be found in the PBL protocol: 1) the indefinite situation, 2) the institution of a problem, 3) the concretisation of a problem solution, 4) the rational reasoning, 5) the probation of the problem solution (Dewey, 1938). Dewey's pedagogical thinking is rooted in American pragmatism and understanding of democracy, and his perspective goes beyond the increase in the knowledge of the individual and refers to the way people live together in a society (Kerres & de Witt, 2004). Reitinger (2018) therefore speaks of an inherent nexus between inquiry-based forms of learning like PBL and democratic learning, as both approaches share essential elements like problem solving, autonomous-thinking and participation.

History

PBL's path to global dissemination began at North American universities, where work on problem cases was integrated into the curriculum at various faculties as early as the middle of the last century. Above all, however, the method is linked to the medical faculty of the Canadian McMaster University, where the entire teaching and learning concept was converted to PBL in the 1960s. The motivation for this radical change lay in the dissatisfaction of the teaching staff with the results of classical education, where good results in the reproduction of acquired knowledge were recorded, but the students had difficulties in transferring their knowledge into concrete actions in real life contexts. Starting from McMaster University, the concept spread worldwide, especially in the field of medical faculties. However, since the re-establishment of Maastricht University in 1976, which was based on the PBL approach, this method has also found its way to other departments and to various school subjects (Savery, 2006).

PBL in teacher training

The PBL approach can also be seen as promising in university teacher training, as it enables a comprehensive build-up of subject matter content knowledge by identifying and working on learning objectives, of pedagogical content knowledge by directly experiencing this form of learning, and of curricular knowledge by the greater focus of PBL on the larger curricular whole (Wilhelm and Brovelli, 2009). Due to the focus on situationality, complexity and authenticity, the approach can better prepare future teachers for the real situation in the classroom than traditional types of instruction (Reusser, 2005).

The Problem Case at the Center

The factors for a successful problem case have been described in various publications and under different approaches.

Des Marchais (1999) approached the question through expert interviews with experienced PBL facilitators, while Sockalingam and Schmidt (2011) base their study on the perspective of students whose reflections on successful PBL were subjected to a content analysis.

In addition, general findings of teaching-learning research on effective didactic design are taken into consideration when considering convincing problems (Ditton, 2002).

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In recent years, promising developments have taken place in this area that provide users of PBL with models for creating effective problem cases. The most important of these recent developments are Hung's 3C3M model (2006) and the 9-step process derived from it (Hung, 2009). In addition, in the conception of the online project described here, the students possibility to choose the problem case they wanted to work on was integrated which is little known in the PBL literature but which recurs to the self-determination theory of Ryan and Deci (2017), in particular to correspond to the students' striving for autonomy and to promote their motivation.

Effectiveness

The growing spread of PBL has been accompanied by criticism, some of which, as in Kirschner et al. (2006), has generally cast doubt on the effectiveness of the approach. Strobel & van Barneveld (2009), on the other hand, come to the conclusion in their meta-synthesis of various meta-analyses that different judgments have to be made regarding the effectiveness of the method depending on the area:

> "Findings indicated that PBL was superior when it comes to long-term retention, skill development and satisfaction of students and teachers, while traditional approaches were more effective for short term retention as measured by standardized board exams." (p. 44)

Intercultural Competence, Digitization, and PBL: Synergies

The three main components of the online project described above are logically related to each other, as will be shown in the following. The most obvious connection is probably between the complexes of interculturality and digitization. The existence of online collaboration tools makes it possible to interact almost in real time with people who are geographically far away. Such an "internationalization at home" can provide intercultural contacts, where these do not automatically arise due to great homogeneity or selectivity of the immediate environment. Such learning arrangements are to be classified at the highest level of the taxonomy of Puentedura (2006), that of the "redefinition", in which online tools make learning experiences possible that would not be possible without media (see table 1).

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Table 1. The SAMR Model (Puentedura, 2006)

	Redefinition	Tech allows for the creation of new tasks, previously inconceivable	**Transformation**
	Modification	Tech allows for significant task redesign	
Enhancement	**A**ugmentation	Tech acts as a direct tool substitute, with functional improvement	
	Substitution	Tech acts as a direct tool substitute, with no functional change	

There is also a natural inner connection between the complex of interculturality and the method of problem-based learning. One of the most important approaches for teaching competencies in dealing with interculturality among trainers and academics has proven to be dealing with so-called critical incidents - intercultural situations that have either been particularly successful or particularly unfavourable due to cultural differences. Critical incidents - which are used almost exclusively in their negative form - have much in common with problem cases, which always form the core of Problem-Based Learning, regardless of the discipline in question (Hung, 2016). The successful work on a critical incident and on a problem case poses many similar challenges: quick answers have to be avoided, different perspectives have to be allowed, additional information has to be generated, exact solutions are not given.

For this reason, Critical Incidents were made the basis of the PBL problem case in the online project.

Finally, the combination of the digital component with Problem-based Learning enables considerable improvements and simplifications of the PBL protocol. Individual points of the classical seven jump can be realized more easily with digital media than in the classical classroom. The brainstorming/brainwriting session, for example, can be realized much more easily with the help of collaborative writing applications (in contrast to analog post-it's and flipcharts). The way in which different groups work together, not in the real world, but in virtual spaces, also facilitates the task of the facilitator, who can assign himself to a virtual group with a single click. Last but not least, the possibility of financial savings must also be considered,

since virtual PBL does not have the large space and material requirements of the classical method.

Methods

Hypothesis

Dimensions of democratic learning experiences (authentic exploration, critical discourse, experience-based hypothesizing, conclusion-based transfer) among students are fostered by the intercultural online-PBL setting.

Personnel and Context

The online project presented here took place in the winter semester 2017/2018 as a cooperation within the teacher training seminars "Education and Socialisation" (Jutta Standop, Christoph Dähling – then University of Trier) and "Introduction to Scientific Work" (Alfred Weinberger – Private University College of Education of the Diocese of Linz). In both cases the participants of the seminars were bachelor students at the beginning of their studies.

Implementation

The learning activity was realised as a virtual seminar in which the Austrian students worked together with the German students in bi-national small groups on an intercultural problem case according to a problem-based learning protocol. The cooperation was made possible by digital tools (video conferencing software, application for collaborative writing, learning management system).

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Tab 2: Schedule of the online project

Time	Activity	Media	Evaluation
Before	Students submit case stories of their own intercultural conflict situations, case stories are analyzed by the lecturers and distilled into three exemplary case stories, students assign themselves to the case that interests them most	Learning Management System	-
1st Week	Online lecture, lecturers introduce the topic and explain organizational matters	Videoconferencing software,	First point of measurement with the CILI (digital questionnaire at the end of session)
2nd Week	The small groups come together, supported by one of the lecturers as facilitator, to work on the problem case.	Videoconferencing software, application for collaborative writing	Second point of measurement with the CILI (digital questionnaire at the end of session)
In between	Self-study phase, literature research and evaluation	Individual (libraries, internet databases, search engines)	-
3rd Week	The small groups come together, supported by one of the lecturers as facilitator, work on the problem case, creation of an end product (hand-out).	Videoconferencing software, application for collaborative writing	Third point of measurement with the CILI (digital questionnaire at the end of session)
4th Week	Joint final conference, groups present their handouts, discussion in the plenary group	Videoconferencing software, Learning Management Software	Fourth point of measurement with the CILI (digital questionnaire at the end of session)

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Tab. 3: The exemplary problem cases

Common to the three cases was the basic constellation of intercultural conflicts: differing expectations due to different life-practical contexts as well as imaginative worlds with regard to values, norms, behaviour, (body) language, etc. (Auernheimer, 2002)
Case A
Case A was mainly about intercultural parental work. The young teacher Sophia has arranged a parental interview with the father of a Syrian girl who has problems finding friends among the children in the class. The teacher is worried about possible intercultural complications beforehand; above all, she fears an unpleasant situation if the father refuses to shake her hand as a woman. For this reason she greets him without a handshake. The conversation reveals irritations caused by different ideas about dealing with representatives of the state and the role of family and friends. Particularly in the aspect of handshake, there is a recognition that even supposed knowledge about intercultural differences must be handled reflexively and flexibly in order not to fall into stereotypical attributions. The teacher has no real indication that her handshake would be rejected, she suspects this only because of her father's cultural background and the story is legible in a way that much of the interpersonal irritation could be explained by the fact that the mood was impaired by denying him a polite, customary greeting.
Case B
Inspired by some of the preliminary student submissions and the literature on intercultural conflicts between Europeans and Chinese, which is particularly rich due to the great diversity of cultures and the economic and political importance of China, the main focus was on dimensions of directness vs. indirectness and individualism vs. collectivism. In case history, the naive use of teaching methods based on Western teaching and learning philosophy by a young German intern at a Chinese school leads to far-reaching conflicts. This aspect provides links to a critical meta-view of the online project itself, because its design is also influenced by Western pedagogy, which should be critically reflected, especially with regard to later collaborations with non-European partners.
Case C
The last case story was about a young female teacher who had to deal with the macho behaviour of different pupils, which introduced a topic that was very often identified as important by the students in the preliminary inquiry. Within the story, the young teacher discusses with her colleague, where ethnorelativist ideas meet ethnocentralist ideas and the students are thus presented with two extreme points of possible discussion to which they can refer in the group work rejecting or agreeing.

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Tab 4: The group work phase and the PBL protocol

Step	Activity	Arrangement	Phase
1	PROBLEM DEFINITION Clarify comprehension problems, identify problem content	Group work	1
2	BRAINSTORMING Collection of hypotheses, use of the preliminary knowledge for their evaluation and classification		
3	STRUCTURING Discussion of the hypotheses, alignment of knowledge in exchange		
4	IDENTIFICATION OF LEARNING OBJECTIVES Formulating as specific a question as possible about learning objects, setting learning objectives		
5	SELF STUDY Independent pursuit of learning objectives through literature	Individual work	2
6	SYNTHESIS Gathering of the findings Creation of a learning product	Group work	3

Data collection and analysis

The hypotheses were examined by using a pre-experimental research design without a control group (N=29). Dependent variables were (1) the democratic learning experiences and (2) the general learning experiences. The democratic learning experiences were assessed before the intervention (pretest), twice during the intervention and after the intervention (posttest). The general learning experiences were assessed after the intervention (posttest only). The data collection method that was used was the Criteria of Inquiry Learning Inventory (CILI, Reitinger, 2016). It evaluates the specific democratic learning experiences "experience-based hypothesizing" (exhy), "authentic exploration" (auex), "critical discourse" (crdi) and "conclusion-based transfer" (cotr). A repeated measures analysis of variance (ANOVA) was performed to examine the data of the CILI.

Results

We examined whether the requirements of a repeated measures ANOVA are fulfilled for the data of the CILI. This analysis revealed that the data of the four dimensions of the CILI are normal distributed (based on the Kolmogorov Smirnov test: $p > 0,5$) and that sphericity can be assumed (Mauchly-test: $p > 0,5$). The data of the repeated measures ANOVA with the within subject factors Time (four points of measurement) and Dimension (exhy vs. auex vs. crdi vs. cotr) reveal a significant main effect Dimension ($F(3) = 4,21$; $p < 0,05$; part. eta2 = 0,20). Post hoc analyses of this effect applying Bonferroni-corrected alpha-level show significant mean differences between the dimensions "exhy" and "auex" ($M_{exhy} = 5,51$; $M_{auex} = 5,23$), "exhy" and "cotr" ($M_{exhy} = 5,51$; $M_{cotr} = 5,06$) and "crdi" and "cotr" ($M_{crdi} = 5,35$; $M_{cotr} = 5,06$). The main effect "Time" and the interaction effect "Time*Dimension" are not significant (Time: $F(3) = 2,21$; n.s.; part. eta2 = 0,12; Time*Dimension: ($F(9) = 1,01$; n.s.; part. Eta2 = 0,06).
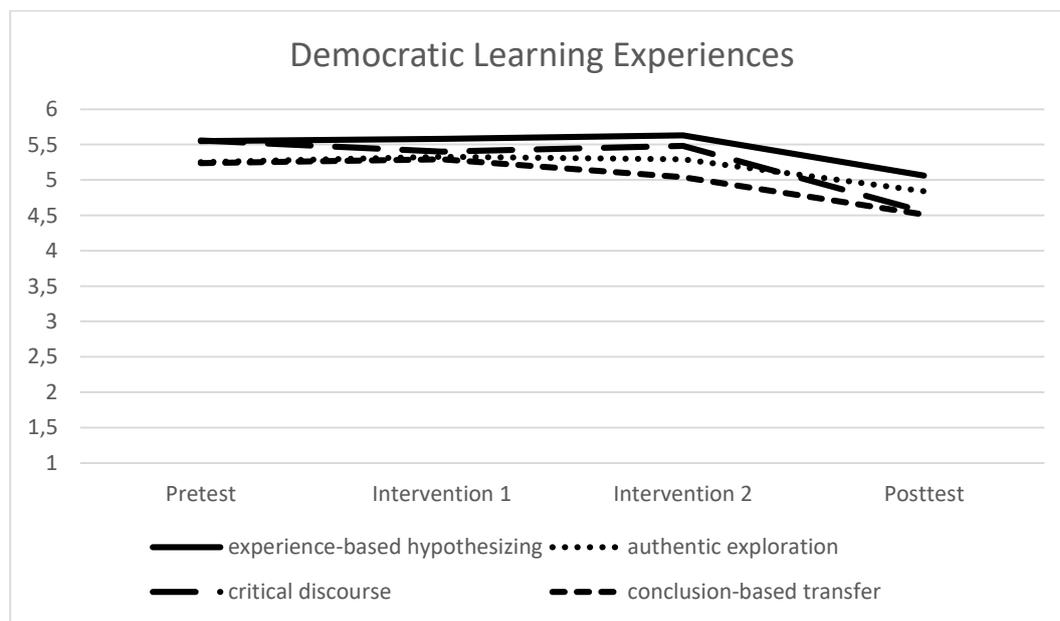
Figure 1: Measurement of the dimensions of democratic learning along four measurement points

Discussion

A possible explanation for the significant mean differences between the dimensions experience-based hypothezising and authentic exploration that have been identified could be a too high degree of control by the facilitator of the group work, who overly dictated the direction in which the group discussion moved. In the future, greater freedom is to be granted here, in combination with more pointed scaffolding, which - for example through greater assistance in researching scientifically high-quality literature - ultimately gives the students greater freedom through help structures by making intervention by the facilitator less necessary for a high-quality discussion.

Furthermore, the significant mean differences between experience-based hypothesizing and conclusion-based transfer as well as between critical discourse and conclusion-based transfer require a discussion. A lack of transfer of the knowledge gained into practice can be observed here, which runs counter to the objectives of the PBL in terms of imparting real life competences. An explanation for these results could be found in the selection of problem cases. It must be determined here whether their design might not prevent transfer because they are too far away from the reality of the participants for them to experience them as relevant and transferable to their own reality.

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