Transfer of learning in the learning society: How can the barriers between different learning spaces be surmounted, and how can the gap between learning inside and outside schools be bridged?

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Transfer of learning in the learning society: How can the barriers between different learning spaces be surmounted, and how can the gap between learning inside and outside schools be bridged?

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For more than a century learning psychology has dealt with the so-called transfer problem: that what has been learned in one context often can be difficult to recall and apply in a different context. This article, building on many years’ theoretical and practical work in the field, starts by defining five main learning spaces in contemporary society, arguing that transfer problems usually turn up in relation to the transition of the boundaries between these spaces, and especially between the school and education space and the spaces of everyday life and working life. Focus is then turned to contemporary theories of learning and knowledge and four different learning and knowledge types are described, which are activated in different situations and imply different transfer possibilities. Finally, two ways of dealing with the problem in school and educational practice are outlined and discussed.

This article deals with the classical problem of transfer of learning as it presents itself in the modern context of issues like lifelong learning and the learning society. About a century ago, progressive learning researchers in North America observed that the results of learning in one type of setting were often not accessible when the learner moved to another setting. School learning, in particular, could often not be recalled and/or applied in everyday life or working life. For this reason, for almost as long as learning psychology has existed, it has been imperative to discover what it would take for learning to obtain utility value across transitions to new situations or learning spaces.

Two main understandings were proposed as answers to the problem. In 1901 Edward Lee Thorndike, often considered to be the founder of educational psychology, together with his colleague Robert Woodworth suggested that ‘identical elements’ must be present in the learning and application situation for transfer to occur (Thorndike and Woodworth 1901). And in 1908 another American...
psychologist, Charles Judd, put forward the more open and optimistic idea that general principles, rules and theories could form the basis for transfer of learning (Judd 1908).

Ever since, these two fundamental positions seem to have been opposites at the same time as other explanations have been sought relating to the nature of the learning content, features of the learner, or the nature of how what is learned is to be used (Illeris et al. 2004). And in the meantime the fundamental problem, in theory as well as in practice, has remained unsolved and its range has increased immensely in step with the general need for learning and the growth and importance of institutionalised learning in schools and education. For society this indicates a waste of resources. For learners it is also about reduced motivation and confidence in school learning.

In order to get to a contemporary understanding of how this problem can be handled in societies where most people more or less regularly participate in learning courses or recurrent education, I shall refer to three different fields of learning theory (for a coherent presentation of this topic, see Illeris 2007): the field of various learning spaces, the field of different types of learning, and the field of different kinds of knowledge application. Finally, I shall return to the topic of transfer and draw the outlines of a more general understanding and its consequences for human development and education.

Although my considerations refer to the transfer issue in general, my practical experience is mainly on how learning and training in schools and other educational institutions can be brought to cooperate with workplace learning. This well-known problem in connection with youth and adult vocational training has been addressed in three major empirical and analytical research projects that I have directed over a period of 15 years.

**Background**

In what was entitled the General Qualification Project, 1992–1997, six researchers worked together with a lot of teachers and trainers in the Danish state adult vocational training system on a very broad and open development project. The main idea of the project was to find ways in which the practical upgrading of unskilled and low-skilled workers could be combined with strengthening relevant general knowledge and so-called generic skills such as flexibility, independence, responsibility, creativity, cooperation, etc. By re-educating trainers and organising a major part of the training courses in projects that were planned and evaluated in the training centres and carried out in relation to specific tasks at work, we gradually contributed to a new orientation of this nationwide training system. At the same time we developed a new theoretical framework of practical and general qualification (Andersen et al. 1994, 1996). Today, it is unfortunately necessary to add that since the training centres were redefined politically as economically independent units, participation has declined considerably and the new educational trends have almost disappeared.

In 1998–2000 in the Adult Education Research Project two senior researchers and three research assistants observed and interviewed participants from across the three main adult education and training systems in Denmark (the adult vocational training system, the adult general education system and the day high schools). The
general aim of this project was to investigate the learning processes and the subjective experience of participants in the education, training and retraining of low-skilled adults, and the main output was a deeper and better structured understanding of the learning ambivalences and barriers of these adult learners (Illeris 2003, 2005, 2006a).

Finally, in 2001–2004 I headed a research consortium that functioned as an umbrella for 16 very different workplace learning development projects. The most important general output of all this was, on the one hand, an overview of the vast and very differentiated possibilities of workplace learning, including cooperation with programmes in schools, and on the other hand, important contributions to workplace learning and general adult learning theory (Illeris et al. 2004, Illeris 2004, 2006b).

During and after these three projects, I have worked with a more general understanding of learning theory, and it is in this connection that a new perspective on the issue of learning transfer has emerged (Illeris 2007).

The concept of learning spaces

Today in the official language the external conditions in connection with different environments of learning are usually referred to by the concepts of formal, informal and non-formal learning. The lack of expediency and exactness of these terms has, however, often been emphasised by researchers, most thoroughly and basically by Colley et al. (2003). In addition, these terms are very abstract, and in my opinion a set of much more descriptive concepts would be preferable.

In my book, The Three Dimensions of Learning (Illeris 2002: 175ff.), I introduced the concept of different ‘learning spaces’, and I elaborated it further in various later publications (Illeris 2004: 145ff., Illeris 2007, Illeris et al. 2004: 29ff.). The central idea behind the concept is that since all learning is situated (Lave and Wenger 1991), and the specific learning situation becomes an integrated part of the learning process and outcome, different types of learning situations or learning spaces imply different categories of learning with significantly different qualities. In today’s society five main types of general learning spaces can be identified:

- **Everyday learning** takes place in daily life as we move around and do not participate in any specifically defined activities. This kind of learning is therefore mainly informal, multifarious, personal and related to the cultures and subcultures in which the person is integrated.
- **School and educational learning** is the intended learning that takes place inside the educational system (whereas unintended learning in this setting will have the character of everyday learning, often with some relation to the educational activities). This kind of learning is formal, rational and externally directed. Although it is officially aimed at goals outside the system, precisely because it takes place inside the system, it is usually experienced as directed by internal goals and standards such as the school subjects, exams or just pleasing the teacher in order to obtain a favourable personal situation with a minimum of discomfort and problems. Today quite a lot of evidence for this has been collected, e.g., in Scandinavia under the heading of ‘the hidden curriculum’ (Jackson 1990, Illeris 2002, 2007).
Workplace learning (or learning in working life) is mainly the incidental learning which inevitably takes place as part of work (Marsick and Watkins 1990), but also includes more formalised learning related to work and taking place inside or outside the workplace. This learning is usually experienced as an integrated part of people’s working life and is therefore usually immediately accepted as relevant and meaningful (if the person in question has any positive identification with the job or task). However, in a wider perspective workplace learning is often limited by the immediate needs of the production or service and influenced by power relations and financial interests, and it therefore tends to lack theoretical understanding and overview (Illeris et al. 2004).

Interest-based learning takes place, e.g., in community activities, associations, grassroot activities and the like, or is simply related to a personal interest, conviction or hobby. It may be seen as a consciously goal-directed type of everyday learning in which incidental and informal features are replaced by a clear motivation and resolution, which generally makes this type of learning space very effective.

Net-based learning has, finally, opened a new learning space of rapidly growing importance and with its own characteristics, advantages and disadvantages. In relation to school and workplace learning, it is very flexible because it can be practised independently of time and, to some extent, also of place. It also seems to be an advantage that it forces the learner to express him or herself in writing and thereby to make points, understandings and opinions clearer than generally needed in face-to-face conversation. The disadvantage is the lack of direct social contact, but frequent classes or meetings can to some extent eliminate this during a net-based course of some duration. Yet, so far we know very little about possible transfer problems in connection with this kind of learning.

As most people today are involved in all or most of these main types of learning spaces, the transitions between them become increasingly essential and complex, and it is my experience that important transfer problems usually occur in connection with transitions between these five main learning spaces.

However, the five learning spaces have a very different nature and history and this also influences transitions and transfer possibilities. Before the breakthrough of early industrialisation and capitalism, for the great majority there was only the learning space of everyday life in which working life, general socialisation and religious commitment were integrated. But for more and more people the introduction of wage labour created a sharp boundary between working life and private life. At the same time institutional and society-directed upbringing and learning in schools had to be introduced, partly to assure a minimal level of general skills for everybody, and partly to prepare for the acceptance of the position as a wage worker, subordinated to the whims of the employer.

In this way three life spaces with fundamentally different conditions were established, the ground was laid for the transfer problem, and it is still these three spaces that are fundamental. Only gradually has the growing complexity of society to a certain extent also separated the interest-based learning space from everyday learning, but the strength of this separation, and thereby also of transfer problems in this connection, is still a question of the subjective experience of the learner. And the new space of net-based learning is in many cases subjectively so closely connected to one of the other learning spaces that no transition is experienced and, consequently,
no transfer problems occur. Perhaps it is only for people who have grown up before the computer age that net-based learning is experienced as something separated, and for later generations the use of computers may be so well integrated in all aspects of their lives that no separation and no boundaries are experienced.

Nevertheless, it is important to observe the general point that it is the subjectively experienced and often unconscious boundaries that constitute the transfer problems since learning as acquisition is always a personal matter. So to come closer to an understanding of how the transfer problems work it is necessary to look at the nature of this acquisition process—i.e., at the subjective side of learning (cf. Illeris 2007).

Four different types of learning

The first thing to observe in this connection is that transfer problems do not turn up every time one needs to or tries to use the results of learning processes across the boundaries of the learning spaces. It is therefore a crucial issue to find out when and under which conditions these problems occur. As I see it, the key to dealing with this question is to realise that there exist some fundamentally different types of human learning that occur in different kinds of situations, have a basically different nature, and also lead to learning results of a fundamentally different character and range.

In learning psychology several and very different learning typologies have been proposed ever since the classical behaviouristic differentiating between simple and operant conditioning. However, after having worked with this issue for decades, in my book *How We Learn* (Illeris 2007), on the basis of Jean Piaget’s understanding of learning and some later elaborations, I have set up a typology of four basic learning types, which has appeared to be of basic significance and among other things has also paved the way for a new understanding of the transfer problem.

The point of departure for this typology is the understanding established by Piaget that to learn something actually means for the learner to include and organise it in his or her mental structures, which exist in the brain as dispositions that can be described by the metaphor of *mental schemes* (see Piaget 1952 [1936], Flavell 1963). This structuring can be established in various ways, and on this basis it is possible to distinguish between the following four different types of learning:

- When a new scheme is established, it is a case of *cumulative* or mechanical learning. This form of learning is characterised by being an isolated formation, something new that is not a part of anything else. Therefore, cumulative learning is most frequent during the first years of life and later occurs only in special situations where one has to learn something with no context of meaning or personal importance, for example a pin code number. Conditioning is also a case of cumulative learning. The learning result is characterised by a type of automation that means that it can only be recalled and applied in situations mentally similar to the learning context.

- By far the most common form of learning is termed *assimilative* or learning by addition, meaning that the new element is linked as an addition to a scheme that is already established. One typical example could be learning in school subjects that are precisely built up by means of constant additions to what has already been learned, but assimilative learning also takes place in all contexts
where one gradually develops one’s capacities. The results of this type of learning are characterised by being linked to the scheme in question in such a manner that it is relatively easy to recall and apply them when one is mentally oriented towards the field in question, for example a school subject, while they may be hard to access in other contexts. This is the main reason for the classical problems of learning transfer between school and other learning spaces, and sometimes also between different school subjects.

- However, in some cases, situations occur where something takes place that is difficult immediately to relate to any existing scheme; this is experienced as something one cannot really understand or relate to. But if it seems important or interesting, if it is something one is determined to acquire, this can take place by means of accommodative or transcendent learning, which implies that one breaks down (parts of) an existing scheme and reconstructs it in a way that allow the new situation to be linked in. Thus one both relinquishes and constructs something and this can be experienced as painful and something that requires a special effort. One must cross existing limitations and understand or accept something that is significantly new or different. The result of the learning is characterised by the fact that it can be recalled and applied in many different, relevant contexts. It is typically experienced as having got hold of something which one really has internalised.

- Finally, over the last decades it has been pointed out that in special situations there is also a far-reaching type of learning that has, inter alia, been described as expansive (Engeström 1987) or transformative learning (Mezirow 1991). This learning implies what could be termed personality changes or changes in the organisation of the self. The outcome is therefore not something to be remembered and recalled, but something that has become part of the person. It is characterised by simultaneous restructuring of several schemes, including emotional and social patterns—a break of orientation that typically occurs as the result of a crisis-like situation caused by challenges experienced as urgent and unavoidable. Transformative learning is thus both profound and extensive and can often be experienced physically, typically as a feeling of relief or relaxation.

As has been demonstrated, the four types of learning are widely different in scope and nature, and they also occur—or are activated by learners—in very different situations and connections. Whereas cumulative learning is most important in early childhood, and transformative learning is a very demanding process that changes the very personality or identity and occurs only in special situations of deep-going significance for the learner, assimilation and accommodation are, as described by Piaget, the two types of learning that would characterise general, sound and normal everyday learning.

The parallel types of knowledge use

In relation to the issue of transfer, it is obvious that there are significant differences in the transfer potential of the four learning types. But before I go further with this, I shall briefly refer to a parallel typology of different kinds of knowledge use, originally set up by American educational philosopher Harry S. Broudy (Broudy et al. 1964) and later elaborated further by British educational researcher Michael Eraut.
(1994), who has also worked with the transfer issue and the application dimension of learning.

Eraut uses the concept of knowledge in a very broad or open sense, coming close to a general conception of capacity or competence, and at the same time he emphasises that one can acquire and possess knowledge in different ways with different qualities. As to the application of knowledge, both Broudy and Eraut point to four different modes of how knowledge is used, each referring back to the qualities of the knowledge in question and how it has been acquired:

- **Replication** of knowledge is about repetition and according to Eraut ‘the replicative mode of knowledge use dominates a large proportion of schooling and a significant part of higher education’ (Eraut 1994: 48). It is characterised by close similarity between the context in which it is acquired and that in which it can be used, and there is no reorganisation in between.

- **Application** of knowledge is about using acquired knowledge under new circumstances, but still follows the rules and procedures related to this knowledge when acquired, i.e., it respects the given ideas of what is considered right or wrong.

- **Interpretation** of knowledge is more demanding as it implies ‘understanding’, which involves personal perspectives or ‘ways of seeing’ and thus requires a professional insight and an intellectual effort—for example ‘the meaning of a new idea has to be rediscovered in the practical situation, and the implication for action thought through’ (49).

- **Association** of knowledge, finally, involves ‘a sense of purpose, appropriateness and feasibility; and its acquisition depends, among other things, on a wealth of professional experience’, which in practice takes on the character of an ‘intuitive capacity’ (49). In other words, for knowledge to be associative in this sense it must be an integrated part of the personality or the self.

The parallelism of these modes of knowledge use and the four learning types described above is striking, and the fact that the two typologies have reached such similar conclusions in different ways and from different theoretical angles indicates that they have come close to some central understanding of a field which has challenged both practitioners and theoreticians of education for a long time.

**Learning, knowledge and transfer levels**

In relation to the issue of transfer it is remarkable that this parallelism makes it possible to set up a succession of four levels of learning and knowledge use which at the same time imply four different levels of transfer possibilities:

- Through cumulative learning, delimited, repetition-oriented knowledge is developed that can be used in situations that are subjectively the same as the learning situation in a decisive way.

- Through assimilative learning, knowledge oriented towards application to a certain subject (or scheme) is developed, which can be used in situations that bring the subject in question to the fore (cf. the theory of identical elements).

- Through accommodative learning, understanding- or interpretation-oriented knowledge is developed, which can be flexibly applied within a broad range of relevant contexts (cf. the theory of general principles).
• Through transformative learning, personality-integrated knowledge is developed on the basis of which associations can be freely made in all subjectively relevant contexts.

Although these four levels of transfer in practice are not so sharply separated as this schematic outline may indicate, they indicate a differentiated understanding of the concept of transfer with important implications for the connections between the acquisition and use of knowledge in the broadest sense, including skills, understandings, attitudes, values, ways of thinking and doing, ways of communication, ways of acquiring new knowledge, etc. The transferability of different kinds of learning processes and learning outcomes appears as directly dependent on the type of learning and the resulting type of knowledge.

However, in stating this it is very important to realise that even though the learning and knowledge types are ranked in a clear succession referring to the complexity and range of the different levels, one cannot and should not draw any conclusions implying that one type is ‘better’ than another. On the contrary, all of the four levels are necessary to build up the capacities and competences of an individual; everything starts with cumulation (in some areas already before birth), and the levels build on and presuppose each other in complicated individual patterns. None of us would have reached our present level of mental capacity without having practised all four learning and knowledge types—an ability which is a specific human privilege far from being equated by any other species. The challenge, to the individual as well as to the education systems, is to find ways to practise a balanced interaction between the four levels. The more complex levels are also the most demanding; nobody can manage to undertake accommodative and transformative learning all the time. These types of learning presuppose that cumulative and assimilative processes have established a basis of fundamental knowledge, something to be further developed and transformed, and we also need stability and time for cementing new capacities.

In daily learning, in schools as well as in everyday life and working life, it is especially the balance and variation between assimilation and accommodation that is challenging. Cumulation belongs, as stated earlier, mainly to the first years of life. Transformation is a very demanding type of learning to which we resort only when we cannot find any other way out of a crisis or a dilemma. And even a balanced combination of assimilation and accommodation seems to be a very demanding task, since it is obviously easier and less demanding just to stick to assimilation, i.e., to stand by our habitual understandings and ways of thinking and doing.

Theory and practice

Thus, returning to the original central issue of the transfer problem about how school and educational learning can be made more applicable outside the learning institutions, the key conclusion to all the considerations above seems to point towards the balance between assimilative and accommodative learning. This is, of course, just a new way of formulating the often repeated view that teaching in school and other educational institutions is too much oriented towards reproduction of subject-matter and the like. However, formulating the problem in a way that directly refers to learning theoretical understandings may lead to a clarification of and thereby also to a basic key for how to deal with the issue in practice.
Why, then, has this not been done before?, one might ask. The answer is, as I see it, that available learning theories have not been suitable for this purpose as they have generally been too narrow in their scope. Up to the 1980s learning theory was, at least in the English speaking countries, dominated by the behaviourist approach, which mainly dealt with cumulative and very simple assimilative learning processes and therefore, as appears from the considerations above, is unable to catch the core of the transfer issue. In contrast to this, in the approach of the American humanistic psychology of the 1950s, the main contribution to learning theory was Carl Rogers’ concept of ‘significant learning’, which explicitly limited itself to the learning that involves ‘a change in the organisation of the self’ (Rogers 1951: 390), i.e., transformative learning, which is not very relevant in relation to transfer either, because it, so to speak, goes to the opposite extreme of the learning spectrum.

Actually, the German Gestalt psychology of the inter-war period came quite a bit closer to what is relevant in relation to transfer by concentrating on learning by problem solving (see Duncker 1945 [1935]), which is closely related to accommodative learning. But it did not really examine the nature of the difference between what has here been described as accommodative and assimilative learning, and this is probably why it did not consider the transfer issue either. Nor did the Russian Activity Theoretical approach of Lev Vygotsky et al. include this topic, although their concept of ‘the zone of proximal development’ (Vygotsky 1978, 1986 [1934]) could have been a relevant entry point for taking up this issue.

Finally, the constructivist approach of Jean Piaget and the ‘Geneva School’ was also launched in the inter-war period. It was here the learning concepts of assimilation and accommodation were formulated, but Piaget concentrated on the actual development of human intellectual abilities and the stages of this development, and this is probably why the transfer issue did not come into his scope. However, it is by taking this approach further, including the incentive and social dimensions of learning, and not least by also taking up the pertinent issue of practice learning and non-learning, that I have returned to the transfer problem from a much broader perspective and thus been able to see the close connection between the learning types and the transfer possibilities (Illeris 2007).

Obviously, it is in relation to everyday and workplace practice that the transfer issue is most urgent, and it is when different kinds of barriers to learning are considered in this connection that the question of barriers to transfer processes also becomes visible. So I shall finish my theoretical considerations by giving as an illustrative example a short account of how they have actually grown out of the practical developmental work in relation to vocational training and the education of youth and adults, in which I have been involved together with colleagues and teachers for more than 30 years (see Andersen et al. 1994, 1996; Illeris et al. 2004).

**Project work**

Our developmental work has been concentrated on two educational approaches that can be practised independently or in combination: project work and school-workplace interaction.

Project work is an educational design that can be traced back to the American educator William Kilpatrick, who in his efforts to transform John Dewey’s educational
thought into practical directions almost a century ago, developed the so-called ‘project method’ (Kilpatrick 1918; Dewey 1934). However, this was a method for individual studies, whereas the educational practice of project work developed in the Scandinavian countries since the 1970s is mainly a procedure for group work (see Illeris 1991, 1999, 2004; Nielsen and Webb 1999).

This Scandinavian version rests on the three fundamental principles of participant direction, problem orientation and exemplarity (the latter implying that the problem chosen must be a valid example of a more general and relevant scholarly, professional or societal issue). The typical procedure is that a group of students, supported by a counselling teacher, select a relevant problem, work out a detailed problem formulation and work plan, investigate and elaborate the problem, draw up a detailed report, suggest possible solutions if they can, or indicate what can be done, the whole procedure ending up in a presentation which, together with the report, may form the basis for a grade or approval.

In Denmark this approach has by now been introduced in a broad range of vocational and academic education programmes and, with some modifications, also in the upper and lower secondary school. In relation to the transfer issue it is central that such project work should increase the probability of a close combination of assimilative acquisition of relevant and useful knowledge and accommodative action, reflection and understanding, which—as already stated—are precisely the most important conditions for transfer of learning. This is also the reason why both the labour market organisations and private as well as public employers in general have been in favour of the approach.

In connection with our developmental work we have been educating various categories of teachers in applying the method and functioning as project counsellors.

School–workplace interaction

However, although project work in the form outlined above is a radical alternative to traditional institutional teaching and often includes quite extensive activities outside school, it does not usually bridge the gap between learning inside and outside schools. Thus there will still be a transition, and although transfer problems can be considerably reduced this way, they cannot be eliminated without direct interaction between two learning spaces.

We have therefore also made efforts to improve the direct interaction between school learning and workplace learning in connection with vocational training and education of youth and adults, and thus we have also been confronted with both the advantages and the problems of the issue of apprenticeship—which during the latest 15–20 years has come into the focus of learning and educational theory, especially through the work of American Jean Lave and Etienne Wenger (1991).

The advantage of the apprenticeship model is obviously that practical learning and socialisation at workplaces are directly combined with more theoretical learning and development of generic skills at school. However, countless reports, especially from the youth vocational training system and from adult education in areas where school courses alternate with trainee periods, have shown that in all such alternating courses there is an omnipresent learning problem which learners usually express as experiencing no or insufficient connection between school learning and learning in practice. This complaint has constantly recurred, at least since
the 1960s, and in spite of all efforts to eliminate it, it seems that it has rather been growing than declining.

To deal with this problem we have tried to strengthen the connections between schoolteachers and workplace supervisors by mutual visits, common meetings, joint planning activities etc. But it has actually been very difficult to establish any kind of truly integrated courses, because school teachers are inclined to think and act in terms of curriculum and syllabus, whereas workplace supervisors think and act in terms of work processes and production. Even though they are dealing with the same trade or services, the two groups have great problems in really accepting and understanding each others’ approaches.

Thus, in order to overcome this obstacle we have tried to combine the school–workplace interaction with the project work issue by introducing student projects in which problems are formulated at school to be dealt with at work, so that practical experience can be reported and elaborated in the following school period. In this way it is actually possible to force through some kind of integrated and experienced understanding by the students—but it has certainly not been without a lot of practical problems and obstacles. The following points can serve as an illustration of a typical project of this kind:

- A project, or a series of connected projects, is spread over two–four shorter school periods with work periods in between.
- The time in school periods is shared between ordinary teaching time and project time, the proportion of the two depending on specific considerations.
- The first school period starts with an introduction and discussion about learner activity, influence, responsibility and project work.
- On one of the first days, project groups are formed and problems, tasks and assignment of the projects are chosen and formulated by the groups.
- The rest of the project time at school is spent on planning, preparing and developing knowledge of relevance to the project. The teacher serves as a counsellor or supervisor.
- The practical part of the project takes place in accordance with the workplace during the following work period. This may consist of individual or group tasks.
- During the next school period, the first part of the project time is spent on reporting and evaluating the projects. The second half is used to prepare a new project or the next step of a longer project.
- If the course includes an exam, it can take the form of a presentation of the project, if possible as a group discussion with individual grading (in practice all group members are given the same grade if there is no obvious reason for differentiation).

Conclusions

On the theoretical level, it is the main conclusion of this re-examination of the issue of transfer of learning that the possibilities of transfer between different learning spaces depend on the type of learning that has taken place and thereby also on the qualities of the learning outcome. Four different types of learning with corresponding qualities of outcome have been presented as a general overview of the field.
In practice it is, therefore, important to develop learning activities that encourage different types of learning, and in particular the importance of a balanced promotion of assimilative (additive) and accommodative (transcending) processes has been emphasised. Project work has been accentuated as a design of school activities that is, in general, well suited to establishing this balance.

In relation to the transfer of learning between school and working life, it has been stressed that close school–workplace integration is important, and integrated school–workplace projects have been recommended as the most appropriate way of establishing this interaction.

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