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« désencapsuler » l'école par apprentissage expansif*

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FINDING LIFE BEYOND THE CLASSROOM WALLS: A CHANGE LABORATORY SUPPORTING EXPANSIVE DE-ENCAPSULATION OF SCHOOL

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In an encapsulated classroom, the school text – the knowledge conveyed by teachers and textbooks and reproduced in tests and exams – tends to become the object of the activity instead of being an instrument for understanding the world. In order to understand and promote sustainable de-encapsulation, we need to identify, document, analyze, and foster a wide variety of actions and practices. Our article contributes to this need by presenting a practical, methodological, and conceptual framework for de-encapsulation in schools. In this study, 8th graders from one comprehensive school in Finland worked on projects chosen by themselves, with the support of researchers during the school year. The projects were carried out in Change Laboratory intervention, a method of participatory analysis and design based on the theory of expansive learning. We built an analytical framework to examine how students took actions to break out of the encapsulated classroom and school while working on the projects significant for them. The expansive de-encapsulation actions were analyzed using three dimensions: 1) the individual or collective nature of the de-encapsulation efforts; 2) the direction of the movement, and 3) the composition of the movement. The findings show significant variation of de-encapsulation actions in the four projects. None of the four project groups was unable or unwilling to engage in de-encapsulation. This indicates that there is a broad spectrum of possible student-led projects that can, in a variety of ways, involve and nourish actions of expansive de-encapsulation. Allowing students to create and lead their own projects has strong potential for the opening up of the school and creating partnerships with progressive actors outside the school.

Keywords: encapsulation, expansive de-encapsulation, action, Change Laboratory, cultural-historical activity theory.

Sortir de la salle de classe : un laboratoire du changement pour « désencapsuler » l'école par apprentissage expansif

Au sein d'une forme scolaire « encapsulée » [fermée sur elle-même], le texte du savoir (les connaissances transmises par l'enseignant et reproduites par les tests et les examens) tend à devenir l'objet de l'activité au lieu d'être un instrument de compréhension du monde. Afin de comprendre et promouvoir une « désencapsulation », il est nécessaire d'identifier, documenter, analyser et encourager une grande variété d'actions et de pratiques. Notre article répond à ce besoin en présentant un cadre pratique, méthodologique et conceptuel pour la désencapsulation de la forme scolaire. Dans cette étude, des élèves de 8^e année [classe de 4^e] d'un collège public en Finlande ont travaillé pendant l'année scolaire et avec le soutien de chercheurs sur des projets qu'ils avaient eux-mêmes choisis. Les projets ont été menés au sein d'un Laboratoire du Changement, une méthode d'analyse et de conception participative basée sur la théorie de l'apprentissage expansif. Nous avons construit un cadre d'analyse pour examiner comment les élèves ont agi pour sortir de l'encapsulation de la classe

et de l'école tout en travaillant sur des projets significatifs pour eux. Les actions de désencapsulation par apprentissage expansif ont été analysées suivant trois dimensions : 1) la nature individuelle ou collective des efforts de désencapsulation ; 2) l'orientation du mouvement d'expansion de l'enquête, et 3) la nature de ce mouvement. Les résultats montrent une évolution significative des actions de désencapsulation dans les quatre projets. Aucun des quatre groupes de projet n'a été incapable ou n'a refusé de s'engager dans la désencapsulation. Cela indique qu'il existe un large éventail de projets possibles dirigés par des élèves qui peuvent, de diverses manières, impliquer et nourrir des actions de désencapsulation par apprentissage expansif. Permettre aux élèves de créer et de diriger leurs propres projets présente un fort potentiel pour l'ouverture de l'école et la création de partenariats dynamiques avec des acteurs en dehors de l'école.

Mots-clés : encapsulation-désencapsulation, apprentissage expansif, laboratoire du changement, théorie historico-culturelle de l'activité.

All the four authors equally contributed to the writing of this article and are therefore listed in alphabetical order.

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INTRODUCTION

Obligatory public schools were created to protect children from child labour and other hardships of life. Paradoxically, this protective mission has led to the separation of the school from the rest of life and to alienated learning – a phenomenon we call *encapsulation*. Efforts to analyze and overcome the encapsulation of school instruction by means of the theory of expansive learning (Engeström, 2015) date back to an article published in 1991.

“The expansive learning approach exploits the actually existing conflicts and dissatisfactions among teachers, students, parents and others involved in or affected by schooling, inviting them to join in a concrete transformation of the current practice. In other words, this approach is not built on benevolent reform from above. It is built on facing the current contradictions and draws strength from their joint analysis. [...] The expansive learning approach would break the encapsulation of school learning by a stepwise widening of the object and context of learning. [...] This kind of expansive transition is itself a process of learning through self-organization from below. The self-organization manifests itself in the creation of networks of learning that transcend the institutional boundaries of the school and turn the school into a collective instrument” (Engeström, 1991, p. 256-257).

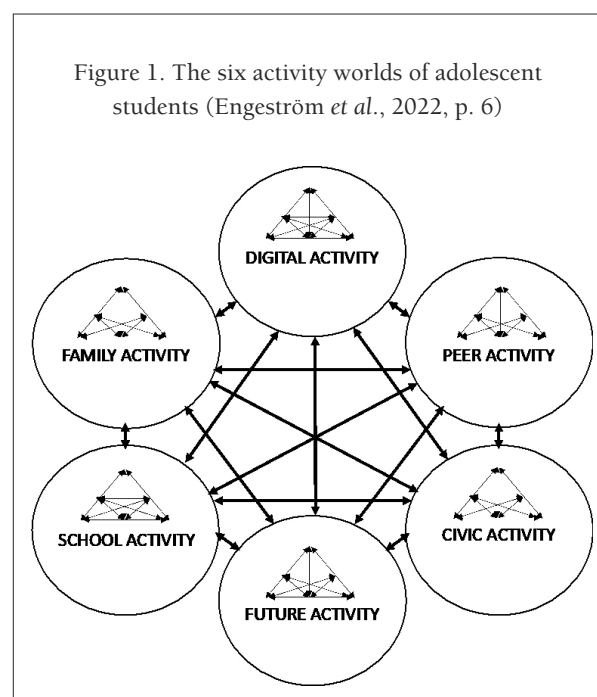
The present article reports on practical, methodological and conceptual steps toward de-encapsulation, taken in a recent project in Finland (Engeström, Rantavuori, Ruutu & Tapola-Haapala, 2023). Our aim is to add momentum to the agenda of moving into the collective zone of proximal development of school instruction. This agenda identifies the zone with the help of two interconnected dimensions, namely that of overcoming skin-deep learning and that of de-encapsulation of the school (Engeström, in press). The skin-deep learning that dominates school instruction around the world was well characterized by Alberts.

“The factoid-filled textbooks that most young U.S. students are assigned for biology class make science seem like gibberish—an unending list of dry, meaningless names and relationships to be memorized. Take, for example, my 12-year-old grandson’s life science textbook. Approved by the State of California, it is filled with elaborate drawings and covers an astonishingly broad range of biology. But the text is largely incomprehensible for its student audience... When my grandson and his classmates successfully complete that book and the class based on it, it is clear that they will know nothing of the kind of biology that inspires passion in the souls of the scientists working in the labs around me...” (Alberts, 2012, p. 1263).

Patricia Phelan and her co-authors (1998) identified three worlds between which school students

move, often with considerable friction: the world of the family, the world of the school, and the world of peers. We added to this model the worlds of digital activity, civic activity, and future activity (Figure 1). Today, encapsulation means the deliberate or habitual tendency to *exclude the students' other worlds from the world of school activity* – although in fact the other worlds penetrate and hybridize with the school world, often without anybody's plan or permission (Engeström, Rantavuori, Ruutu & Tapola-Haapala, 2022).

In an encapsulated classroom, the school text – the knowledge conveyed by teachers and textbooks and reproduced in tests and exams – tends to become the object of the activity instead of being an instrument for understanding the world. When the text becomes the object, the instrumental resources of the activity are impoverished – students are left “on their own devices,” to deal with decontextualized abstractions. This typically hits hardest those students whose families and communities are most vulnerable to begin with. These are typically students who have little or no access to academic knowledge and skills outside the school. Encapsulation is closely connected to *compartmentalization*, the fragmenting of learning and knowledge into closed compartments dedicated to different school subjects and their specific demands of reproducing correct answers.



De-encapsulation efforts are not alien to regular school work. However, when de-encapsulation is initiated and directed by teachers, it is often limited to short-term events squeezed in between tasks dictated by standard curricula, for example excursions and visits by outside experts in classrooms. Such relatively compartmentalized events tend to have only limited impact on the overall experience of school learning. Thus, we should pay serious attention to and nourish *students' own attempts at de-encapsulation*. Clearly student-initiated de-encapsulation is a long journey. It may initially emerge as small steps and modest initiatives. Yet, if they come together and begin to cross-fertilize, such small steps and modest initiatives may generate a sea change.

Cultural-historical activity theory and the theory of expansive learning have been used as resources in a variety of attempts at de-encapsulation. At the risk of over-simplification, we may see four main strands in these attempts. One strand consists of efforts to *move students out of the school*, to become involved in real-life activities that have value for the school. A good example is the recent paper of Ghadiri Khanaposhtani *et al.* (2022) on youth participation in community and citizen science programs in out-of-school settings. The paper reports on experiences of moving the students “towards activities which mirror the multi-role nature of professional scientists and their research practices” (p. 1749).

The other prominent strand consists of efforts to *move resources of the students' out-of-school life-worlds into the school*, to challenge and enrich the knowledge prescribed in curricula and textbooks. Studies within this strand include the funds of knowledge approach (Moll *et al.*, 1992; Gonzales, Moll & Amanti, 2005), based on the premise that students, their families, school staff and researchers together build an educational practice in which local culturally developed knowledge, skills and traditions are recognized and cultivated. This strand also includes efforts to foster students' movement, exploration and engagement in urban environments (Leander, Philips & Taylor, 2010; Morrison *et al.*, 2019; Taylor & Hall, 2013).

The third strand consists of student-led projects (e.g., Azevedo, 2006; Hilppö & Stevens, 2023; Vare, 2021). When such projects are truly shaped by the students and have sufficient longevity, they may include both *students' movement out of school into the world*, and *movement of resources of the students' out-of-school life-worlds into the school*.

The fourth, perhaps most demanding type of de-encapsulation is represented by efforts taken by *entire schools to build long-term partnerships with various actors and activity systems in their communities*. Inspiring examples of this may be found in the work of Yamazumi (2010; 2014; 2021) and Jóhannsdóttir (2018).

The present article examines bi-directional efforts of de-encapsulation that correspond to the third type sketched above, namely four projects¹ initiated and led by 8th grade students that went on for an entire school year.

This article seeks to answer two research questions, one substantive and the other one methodological:

1. What kinds of possibilities for and limitations to de-encapsulation may be identified in student-led longitudinal projects hosted and supported by the school?
2. What kinds of methodological solutions and novel challenges are found in an effort to systematically analyze de-encapsulation in student-led longitudinal projects hosted and supported by the school?

TWO KINDS OF DE-ENCAPSULATION

The core of the encapsulation of the school resides in the specific subjects of instruction. A school may be quite open to the outside world in its daily interactions, yet the contents of instruction in the various subjects commonly remain self-contained, as if pre-packaged within curricular modules and textbooks, enforced by frequent exams and tests.

However, we also see a growing array of forms of de-encapsulation that do not represent a deliberate emancipatory strategy and fail to challenge the predetermined instructional contents. We call these forms *chaotic de-encapsulation*. Three forms of chaotic de-encapsulation are particularly salient. First of all, schools are increasingly used as marketplaces for various commercial and corporate actors (Parreira do Amaral, Steiner-Khamsi & Thompson, 2019; Hogan & Thompson, 2020; Seppänen *et al.*, 2023). Secondly, social media and associated patterns of behavior and interaction are brought into schools by students of all age groups and have pervasive contradictory impact on everyday school life (Olowo *et al.*, 2020; Raza *et al.*, 2020). Thirdly, the notion of ‘open learning environments’ (Hannafin, Land & Oliver, 1999) has had significant impact both in terms of

bringing digital tools into classrooms and in terms of architectural design of schools as ‘open spaces’. These three forms of chaotic de-encapsulation sometimes make teachers and students feel overwhelmed and under-appreciated. Indeed, re-encapsulation may at times be warranted as defense against the intrusive forces of chaotic de-encapsulation.

In contrast to chaotic forms of de-encapsulation, we advocate *expansive de-encapsulation* of schools. Such alternative type of de-encapsulation has four key characteristics: (1) it is based on the students’ own initiatives, concerns and interests, formulated and pursued in dialogue and collaboration with instructors and other stakeholders; (2) it takes shape in longitudinal collective efforts that go beyond short-term individual self-interests and are connected to the advancement of common good; (3) it seeks critical dialogue with and anchoring in the contents and forms or regular instruction in school subjects; and (4) it initiates and maintains durable partnerships between the school and the surrounding communities, including various activity systems that are oriented toward promotion of human flourishing and common good. In other words, expansive de-encapsulation seeks to expand the object and motive of school learning and school instruction, not only in terms of geographic and social space but also in terms of substantive contents and ethical-political commitments.

ACTIVITY, ACTION AND PROJECT

In our analysis, the distinction between activity and action made by Leont’ev (1978) plays a foundational role. For Leont’ev, object-oriented activity, or activity system, was the foundational unit of analysis. For him, the object was the true motive of an activity. For example, the object of a collective tribal hunting activity would be the wild game that could feed the tribe – and this object also embodied the motive of the activity. In a complex activity, division of labor separates individual goal-driven actions from the overall object and motive.

“We call a process an action if it is subordinated to the representation of the result that must be attained, that is, if it is subordinated to a conscious purpose. Similarly, just as the concept of motive is related to the concept of activity, the concept of purpose is related to the concept of action. The appearance of goal-directed processes or actions

in activity came about historically as the result of the transition of man to life in society. The activity of participants in common work is evoked by its product, which initially directly answers the need of each of them. The development, however, of even the simplest technical division of work necessarily leads to isolation of, as it were, intermediate partial results, which are achieved by separate participators of collective work activity, but which in themselves cannot satisfy the workers' needs. Their needs are satisfied not by these 'intermediate' results but by a share of the product of their collective activity, obtained by each of them through forms of the relationships binding them one to another, which develop in the process of work, that is, social relationships." (Leont'ev, 1978, p. 63-64)

Blunden (2009) proposes that a collaborative project, not activity, should be the prime unit of analysis of activity theory. Cambridge English Dictionary defines a project as "a piece of planned work or an activity that is finished over a period of time and intended to achieve a particular purpose." In other words, projects are limited in their duration and aimed at a more or less clear predetermined goal.

The very idea of activity as an object-driven generative formation, temporally unbounded, not reducible to plans and open-ended in its outcomes, is foundational for understanding the creative potential and historical responsibility of human beings and their communities. The temporally bounded and goal-directed character of projects makes Blunden's proposal alien to the very mission of activity theory. These limitations of projects have been identified by both activists and scholars. A Nicaraguan agroecological activist cited by Holt-Giménez (2006, p. 171) stated: "We promote projects, and projects have a short life. They are unsustainable. The problems go farther than whether or not the aid arrived or if the people implemented different techniques." Correspondingly, organizational scholars have identified what they call 'the project learning paradox', pointing out that "the temporary nature of projects [...] seems to inhibit the sedimentation of knowledge, because when the project dissolves and participants move on, the created knowledge is likely to disperse" (Bakker *et al.*, 2010, p. 494).

However, short-term individual and group actions may grow into durable activities. This kind of expansive transformation typically involves search for and testing of possible objects and motives (Bratus &

Lishin, 1983). Such search is particularly prominent in adolescence, as young people explore and shape their life commitments, careers and identities. Projects initiated and led by adolescents may be seen as efforts of finding and generating new, durable and generative activities. Such projects can be lengthy, and they typically generate complex strings or bundles of actions. Yet they are temporally finite and often their intended end product is more or less explicitly spelled out at the beginning. This kind of projects may be regarded as intermediate formations between goal-directed actions and object-driven activities. In the present analysis, we focus on this type of projects.

CONTEXT, INTERVENTION AND DATA

The Finnish education system aims to offer equal educational opportunities for all. Education is free of charge from pre-primary to higher education. The local authorities and other education providers maintain comprehensive schools for students between 7 and 16 years of age. One-year pre-primary education before the comprehensive school has been compulsory for all children in Finland since 2015. Compulsory primary education begins with comprehensive school, usually during the year the child turns seven. School place is assigned to each child close to their homes by local authorities. Parents are also free to apply for a place in another school of their preference where the pupil can start if there is room. Compulsory education ends when the student reaches the age of 18 or when the student has completed upper secondary qualification.

Finnish teachers are required to have a Master's degree. Teachers are highly educated and committed to their work. The education system in Finland is based on trust in teachers and their education. Teachers can choose which teaching methods and learning materials they want to use. Finland has no national test for students in primary and lower secondary education. School ranking lists do not exist. Teachers are responsible for assessments based on the goals and assessment criteria written in the curriculum.

Our study aims to identify and test ways in which adolescent students can find and cultivate significance in their lives, understood as commitments and actions that connect the adolescent students' personal interests with collective actions and projects for a just and equitable world (Engeström, Rantavuori,

Ruutu & Tapola-Haapala, 2022; 2023). We conducted this study in a public comprehensive school with 500 students in Helsinki metropolitan area. The school has grades from 1 to 9, including several special education classes. Like all comprehensive schools in Helsinki, our research site organizes the instructions following the principles of inclusion. Students who need intensified or special support for their learning or schooling are offered this support in their nearest school. At the time of the research implementation, 38% of the school's students received intensified or special support, and 37% studied Finnish as a second language. The school received positive discrimination funding from the City of Helsinki to prevent marginalization and reduce social exclusion.

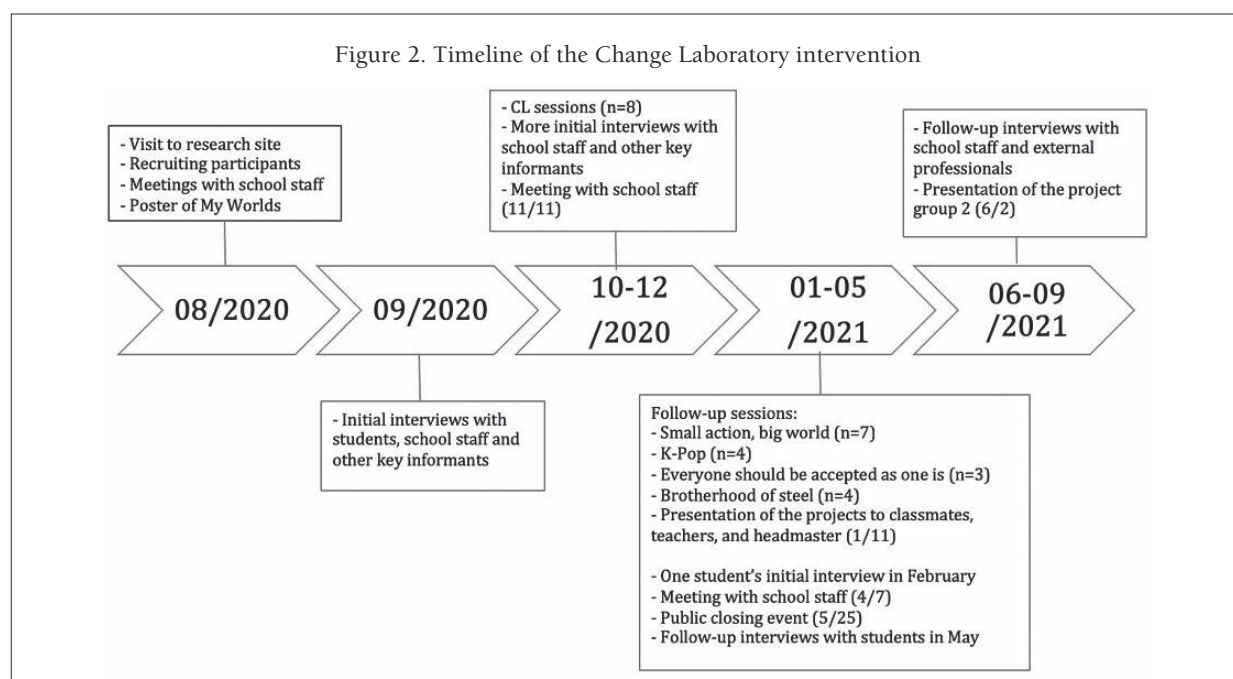
After a commitment from the school's principal, research permission was granted by the Education Division of the City of Helsinki. The principal of the school helped us with recruiting participants. We wished to have 14–15-year-old eight grade students representing the typical school population. The principal suggested a group of 8th-grade students whom researchers met at school before the beginning of the study. Participants were informed in advance in writing and orally about the research. Researchers ensured that the given information was clear and understandable and addressed that it is possible to withdraw from this study at any point without consequences. Consent was asked from the parti-

cipants and their guardians, who received written information letters and consent forms that comply with the data protection regulations.

Altogether, fourteen 8th-grade students voluntarily began to work on long-term projects chosen and shaped by themselves. The process was carried out as Change Laboratory (CL) intervention (Sannino *et al.*, 2016; Virkkunen & Newnham, 2013) over the school year 2020-2021. The CL is a method for participatory analysis and design, based on the theory of expansive learning. “The very point is to generate the unexpected—learning what is not yet there” (Sannino & Engeström, 2017, p. 81). The CL typically consists of 6 to 10 sessions, with one or more follow-up sessions.

The CL sessions were conducted within regular school hours and in a regular art classroom space. The projects' topics, contents, and means were selected, designed, and implemented by the students without the constraints of the regular curriculum and the pressures of testing and grading. This CL primarily involved students themselves and put them at the center as the owners of the process. The central actors and agents of change were 14 to 15-year-old middle-school students. Projects were conducted with the support of researchers, school staff, and external experts if needed. Figure 2 presents the timeline of the Change Laboratory intervention.

Eight CL sessions were held in the school weekly during the fall of 2020. In the first session, researchers



presented examples of Finnish adolescents' common concerns and interests. After that, researchers asked students to think about topics that they find relevant to themselves. Students wrote down their thoughts independently, and after that, topics were discussed together. In the first and second sessions, participants formed project groups to construct and implement projects they found significant for them. Each of the four researchers, the authors of this paper, was responsible for one of the project groups. In the third session, the groups elaborated on their projects' topics and guiding ideas. Table 1 presents the names, topics, and products of the four projects.

At the beginning of each session, groups were given a common task to support their projects. At the end of the session, all participants gathered together, and groups reported on what they had worked on during the session and on their plans for the next session.

In January 2021, students presented their projects to classmates, teachers, and the principal. After that, 19 follow-up sessions were organized during the spring term. The number of follow-up sessions depended on the situation of each project (see Figure 2).

A public closing event of the research project was held at the school at the end of May 2021. Students prepared presentations of their projects with the help of researchers. Students presented their projects and final products at the closing event to a broader audience. The principal of the school and the deputy mayor of the City of Helsinki gave talks at the event. A Finnish member of the European Parliament commented and provided feedback on students' projects after each presentation.

Our data consists of recordings of the eight CL sessions, 19 follow-up sessions, the public closing event (3632 words), and ten final interviews (58 808 words). The length of the CL sessions varied between 66 and 98 minutes and of the follow-

up sessions between 30 and 155 minutes. The length of the final interviews varied between 34 and 117 minutes. The data was transcribed verbatim by professional transcribers. Table 2 presents the number of transcribed words for each of the four project groups.

METHOD OF ANALYSIS

The first step of our analysis consisted of preliminary identification of all actions of de-encapsulation in the unfolding of the four projects. For example, the issues of equality, bullying and mutual acceptance may be understood as an object that motivated the emerging activity of creating a documentary film in the project 'Everyone should be accepted as one is' (see Table 1). That emerging activity was accomplished by means of numerous goal-directed actions, such as selecting interviewees or writing the script for a segment of the film. Some of these actions opened up the classroom or the school to interaction with the outside world, for example project group members going to the headmaster to ask for advice, or inviting selected persons to come to the school to be interviewed on film. We call such actions *de-encapsulation actions*. These actions were primarily taken during school time, within the Change Laboratory sessions, although they gradually expanded also beyond the school hours.

As the second step, we constructed and implemented a three-dimensional framework for the analysis of the data. The first dimension is that of *directionality and scope of the de-encapsulation action*. This dimension contains four categories: (a) moving out of the classroom into the wider school; (b) moving out beyond the school; (c) bringing the

Table 1. Names, topics, and products of the four projects

Name of the project	Topic of the project	Product of the project
Small action, big world	How do one's positive and negative words and actions affect other people?	A booklet and posters
K-pop	The meaning of music, especially K-pop, for people	Survey and presentation on K-pop
Everyone should be accepted as one is	Equality, bullying, and mutual acceptance	A documentary film
Brotherhood of Steel	A tabletop role-playing game that combines history and science fiction; in the game, you have the possibility to either be yourself or whoever you want	A tabletop role-playing game

Table 2. Number of transcribed words by project groups

	CL sessions	Follow-up sessions	Total
Small action, big world	≈ 39,000 words	≈ 44,000 words	≈ 83,000 words
K-pop	≈ 32,000 words	≈ 30,000 words	≈ 62,000 words
Everyone should be accepted as one is	≈ 44,000 words	≈ 14,000 words	≈ 58,000 words
Brotherhood of steel	≈ 43,000 words	≈ 50,000 words	≈ 93,000 words
Total	≈ 158,000 words	≈ 138,000 words	≈ 296,000 words

wider school into the classroom; (d) bringing the outside world into the school.

De-encapsulation actions are illustrated by arrows. Their direction describes the direction of de-encapsulation action in question, and their size whether the de-encapsulation action is related to the wider school or to the outside world (Figure 3).

The second dimension of the analysis is that of *subject of the de-encapsulation action*. This dimension contains three categories: (a) individual actions (illustrated by a circle); (b) group action (a cloud); (c) organizational action (a square). By organizational actions we mean actions taken by representatives of organizations, for example by the headmaster of the school or by representatives of non-governmental organizations (NGOs) invited to support the students' projects. Actions taken by individual teachers were considered as individual actions, as teachers usually do not act on behalf or as appointed representatives of the school organization.

The third dimension of the analysis is that of *vehicle of the de-encapsulation action*. This dimension contains three categories: (a) movement of people (illustrated by red color); (b) movement of text, discourse or representations (blue); (c) movement of images and imaginaries (green).

The categories in each dimension may be to some extent overlapping. For example, one and the same action may involve both movement of people and movement of textual representations. However, as we conducted the analysis at the relatively detailed and fine-grained level of actions of de-encapsulation, the *dominant mode* of each action could regularly be determined in each of the three dimensions so as to reach a consensus among the four authors.

It must be pointed out that we also found *actions of re-encapsulation* (illustrated with a 'Do not enter' sign). Actions of re-encapsulation include protective isolation and closure of projects vis-à-vis the outside

world, including students from other project groups within the Change Laboratory.

The analytical framework is summarized with the help of graphic symbols in Figure 3. We will now apply the analytical framework to the data on the four student-led projects.

PROJECT 'SMALL ACTION, BIG WORLD'

The members of the group had experienced exclusion and bullying and wanted to do something to alert other students to stop it. The students decided to create and administer a questionnaire to collect their fellow students' experiences of both negative and positive impact other people's words and actions can have on us. On their own initiative, they walked to the headmaster's office to ask for support for the questionnaire. They got a permission and encouragement to send the questionnaire to all students of the school. This gave the process traction, and they eventually received 108 responses. One of the students began to draw pictures that illustrated some of the responses.

The work of the group resulted in a 24-page printed booklet, titled *Small Action, Big World*. It consists of 16 responses to the questionnaire and the group members' commentaries to the selected responses, plus pictures drawn or painted by a student (Figure 4 is an example). The printed booklet was distributed to all students of the school. In addition, four pictures were enlarged and, together with the associated commentaries, printed as posters that were placed on multiple walls of the school.

In the booklet, the picture of Figure 4 was presented as an illustration of excerpts from students' answers to the questionnaire and the project group's comments on these excerpts. Here is an example of such an excerpt and the group's comment on it.

Figure 4. Illustration from the booklet produced by the project group ‘Small action, big world’ (picture by Rania Al-Mafrachi)



“They have scolded me, meaning it as a joke, but one could well take it as malicious. They spoke in a malicious tone.”

Even if you try to say something as a joke, you cannot always be sure whether you meant it for real. It is wise to follow up on what impact one’s own words have, and to think how you could perhaps change your habits. Even a small amount of malice in your tone or laughing can lead to many problems.

The members of this project group were from the beginning driven by personally experienced conflicts. They wanted to reach a wide audience, primarily fellow students. For this they searched and received authorization from the headmaster of the school. They produced the questionnaire by themselves, but they brought in outside expertise for the design of the booklet and posters. The actions of de-encapsulation taken within the project are summarized in Figure 5.

The group produced the whole substance of the booklet and posters, namely texts and pictures, but a professional graphic artist took care of the layout in collaboration with the students. In an online meeting, the graphic artist and the students discussed the layout, the order of the texts, which pictures and texts would be placed on the same page, and the color and fonts of the booklet. During the process, the students commented on and made suggestions for the different versions of the layout of the booklets and posters. Before the material was taken to a printing press, the students accepted the final version of the layout. The fee of the graphic artist and the prin-

ting of the booklet and posters were paid from the budget of the research project.

As can be seen in Figure 5, eight de-encapsulation actions were directed outward and four inward. Nine of the 12 actions were performed by the group. Five actions involved physical movement of people, whereas seven involved movement of text and discourse. The following comment by one of the group members illuminates the students’ experience of de-encapsulation.

“Well, we got to decide what we do, actually all the time. We were able to get a graphic artist, which probably wouldn’t be possible in school. It wouldn’t happen. Because we often don’t have very much power. For instance like in presentations, there may be a certain topic or length or amount. Here we had a lot more influence over it [the project]. And then, of course, we haven’t done anything like this in school before.” (Final interview with a student, project group ‘Small action, big world’)

The student’s statement “which probably wouldn’t be possible in school” is particularly interesting. The project group worked in a school classroom and during regular school hours – yet the student did not experience this as being “in school.” This reflects the empowering potential of student-led projects. But the student’s statement also reflects an important problem, namely the fact that the projects remained largely disconnected from the contents and processes of regular classroom instruction in the different subjects.

PROJECT ‘K-POP’

K-pop, Korean popular music, is a voluminous music phenomenon with lots of international fans. To the fans, K-pop may be a significant part of life that brings happiness, sense of community, and emotional closeness (e.g., King-O’Riain, 2021; Laffan, 2021; Park *et al.*, 2021). The group ‘K-pop’ produced a presentation on K-pop, based on an inquiry targeted at fans from different countries. The choice of the topic was not self-evident. Group members doubted if music, although personally significant, could be an issue significant enough for being a project theme that others would find relevant.

Student A: Everything that interests me is not significant in any way.

Researcher: But it is to you.

Student A: Well, I don't know.

Researcher: What are they [your topics of interest], what would you like to say? Because they are significant if they are interesting. And surely there are also other people who think the same way.

Student A: Music. It is not significant in any way.

Researcher: Why is it not significant?

Student A: It is not. (Change Laboratory session 2)

In this project, something significant to the group but unrecognized at school was brought to the school from the outside world. There were also hesitations and rejections, including an action of re-encapsulation when the group initially refused to show K-pop videos to the participants of the other project groups within the Change Laboratory. The group used the Internet to ask for comments from personal acquaintances. They did not use online forums available for larger, anonymous audiences. The actions of de-encapsulation and re-encapsulation taken within the project are summarized in Figure 6.

Out of the 13 actions of de-encapsulation in this group, five were directed outward and eight inward. Eight de-encapsulation actions were performed by individuals and six by the group. Five actions involved physical movement of people, whereas eight involved movement of text and discourse.

In the final interview at the end of the school year, a member of the project group was asked about possible connections between the project and regular school instruction.

Researcher: Well, did you get, through this work, some ideas on what could be done in a new way at school altogether?

Student A: Well, they use lots of books. They could use also computers in some subjects. (Final interview with a student, project group 'K-pop')

The student's response indicates dissatisfaction with the bookish bias of instruction, perhaps made salient by the experience of actively using digital videos and the Internet within the project. However, connections between the contents of the project and contents of the subject matter taught in various school subjects were not taken up.

PROJECT 'EVERYONE SHOULD BE ACCEPTED AS ONE IS'

Equality, bullying, and diversity were important themes for the members of the project group 'Everyone should be accepted as one is.' They had seen or experienced themselves bullying, prejudices, racism, and inequality at school, in their leisure time, and on social media platforms. They felt that everyone should understand that it is not OK to bully or exclude other people. They also felt that it is difficult to intervene without becoming oneself bullied, excluded or even subjected to violence. They emphasized many times the importance of their topic.

Student A: We chose this topic because it is important. It should be made more visible so that all people would understand how important it is. (Change Laboratory session 2)

The group decided that they would create a documentary film. It would include drama scenes of bullying situations, the points of view of the perpetrator and the victim of bullying, and interviews with people who have experienced bullying or discrimination. The group began planning the manuscript and recruiting interviewees and actors. Researchers found a documentary film maker who worked with the students in three Change Laboratory meetings.

The group continued planning the contents and practical realization of the documentary with the help of the documentary film maker. They discussed and designed the scenes and dialogues of bullying situations. The group also discussed locations, music and colors that would depict different emotions related to bullying, such as anxiety and fear. The perspectives of the bullied and the bully were represented with the help of bullying narratives created by the students. The documentary film maker guided the students in formulating interview questions. They also discussed the practical realization of the interviews and the timetable of filming.

The work of this group was objectified in the form of a 10-minute documentary film 'Everyone Should Be Accepted as One Is', which was filmed in school during two school days. Other students from the school acted in the film. The group conducted four interviews in the school. The documentary was shown in the closing event of the research project, in the group's own school, in other schools, and it is still available on a

website with Finnish and English subtitles. Figure 7 represents frames captured from the film.

In this group, de-encapsulation actions were rich and continuous throughout the project (see Figure 8). Altogether 49 actions of de-encapsulation were taken in this project. Out of them, 22 were directed outward and 27 were directed inward. 19 actions were performed by individuals, 26 actions were performed by the group, and five actions by representatives of organizations. 10 actions of de-encapsulation were accomplished by moving people, whereas 38 of them were conducted by means of text, discourse and representations. The action of planning of the drama scenes of the documentary together with the documentary film maker was coded as having been accomplished primarily by means of imagination.

Besides the participation of the city's deputy mayor in the closing event of the research project, shared by all the four projects, this trajectory also included de-encapsulation actions by two organizations outside the school. Students found it essential to obtain more knowledge of bullying. Researchers suggested they could have a phone call to a NGO that works at the national level in Finland, supporting schools to resolve bullying situations. We arranged a time for a phone call. Students prepared questions for two representatives of the NGO and wrote them down beforehand. Each student presented one question, such as *What is the motive of the bully?* and *How is it possible to end bullying?* After the phone call, one student commented on it: "They answered very well." The group also needed to find a person to be interviewed about bullying and discrimination. The researcher found a platform called Speaker Forum, and students made a phone call to its coordinator. The students described their project and the reason for the phone call. The coordinator suggested three persons. In the next session, students chose one of those three who promised to be interviewed.

Although this group took an exceptionally large number of de-encapsulation actions, this was not easy and did not happen automatically. The students had intensive debates about the choice of interviewees, they practiced phone calls and prepared interview questions beforehand. Students reflected on the process during the intervention, in the final interviews, and at the closing event. They pointed out several things they learned during the project and connections between their project and ordinary schoolwork.

Figure 7. Two frames from the documentary film produced by the project group 'Everyone should be accepted as one is'



Researcher: Did something that you studied in school support doing it [the project]?

Student A: Information technology, yes. Finnish language.

Student B: Yes. At least I have been in optional drama, and perhaps some ideas came from there into this manuscript. And then just this basic experience that we get in school, too.

[...]

Student A: But [name of the Finnish language teacher] says that in our project we went through all sub-domains of Finnish language. (Final interview with the project group 'Everyone should be accepted as one is')

The actions of de-encapsulation and re-encapsulation taken within this project are summarized in Figure 8.

PROJECT 'BROTHERHOOD OF STEEL'

The members of this group developed and played a dystopic tabletop role-playing game called 'Brotherhood of Steel'². The topic and the name of the project were articulated by the group members as follows:

Brotherhood of Steel role-playing game which combines history and science fiction and while playing it you can be yourself or anyone you want. (Report of the project group 'Brotherhood of Steel', Change Laboratory session 2)

In the third session of the Change Laboratory, the group members explained further their choice of topic:

Researcher: Why are we making this project?

Student A: Because we want that people can be themselves, who they are. And it is also fun.

Researcher: That was well said. How does a role-playing game help people to be themselves?

Student A: You can be anyone, anywhere you want. Nobody is going to bully you.

Researcher: Do you mean that through a role you can...?

Student A: You can be a different gender. No one comes to you and says, hey, you are a boy, so you cannot be a girl.

Student B: So, you can even be a stray dog. (Change Laboratory session 3)

The group created its own graphic logo (Figure 9).

The 'Brotherhood of Steel' role-playing game was created from three separate worlds that later merged into one heterogenous but shared world. A map of the worlds was drafted on brown kraft paper and became a central artifact for the group.

This project group mainly worked in a separate part of the classroom. The members of the group did not easily allow outsiders to enter their world and they twice denied school staff members and students from other projects access to the group.

A role-playing game is foundationally a fantasy activity (Fine, 2002). Consequently, the entire process of this group's work was saturated by the use of imagination.

The de-encapsulation and re-encapsulation actions of this group are summarized in Figure 10.

The most puzzling feature in the de-encapsulation conducted by this group was the continuous flow of imagination in the group members' gestures, words and actions. This feature is represented by means of the green continuous two-headed arrow on the top of the Figure 10. This flow was accomplished by the group as a whole, often in the form of one member completing the sentence, gesture or action initiated by another member. Isolating specific de-encapsulation actions in this flow turned out to be very difficult, and it remains an unsolved methodological challenge.

Besides de-encapsulation by means of the continuous flow of imagination, this project included five de-encapsulation actions directed outward and six directed inward. Only two of these actions were performed by the group. Seven of these de-encapsulation actions were performed by moving people, four by moving text and discourse. Perhaps the most surprising actions were taken when individual group members started to communicate with the professional transcriber by talking to the video camera during the Change Laboratory sessions – and the transcriber responded by inserting in the transcripts short messages to the group members.

Researcher: The one who is writing these [transcripts] is a fan of this group. You have such funny stories and so nice things going on.

Student A: Is she our fan or?

Researcher: Yes, she is. She wanted to send her regards.

Student A: Regards back to her.

Researcher: I'll tell her and she also hears...

Figure 9. The logo of the project group 'Brotherhood of Steel'

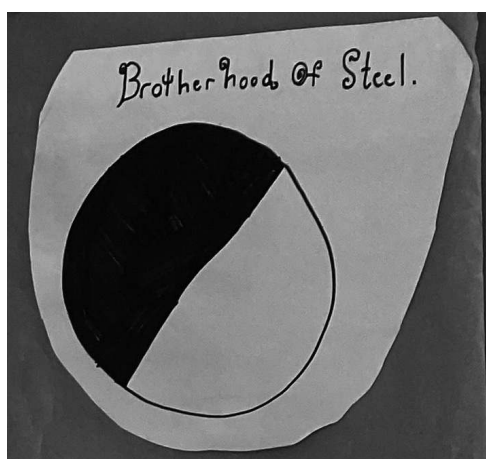
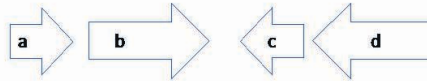


Figure 3. Symbols used in the analysis of de-encapsulation and re-encapsulation actions

1st dimension: Directionality and scope of the de-encapsulation action

(a) moving out of the classroom into the wider school; (b) moving out beyond the school; (c) bringing the wider school into the classroom; (d) bringing the outside world into the school



2nd dimension: Subject of the de-encapsulation action

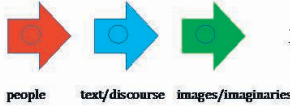
(a) individual action; (b) group actions; (c) organizational action



...and so on, using the symbols of the 1st dimension as basis

3rd dimension: Vehicle of the de-encapsulation action

(a) movement of people; (b) movement of text/discourse; (c) movement of images and imaginaries



...and so on, using the symbols of the second dimension as basis

Re-encapsulation:

Participants express a desire or a decision to close access to their project



Figure 5. Trajectory of de-encapsulation actions taken within the project 'Small action, big world'

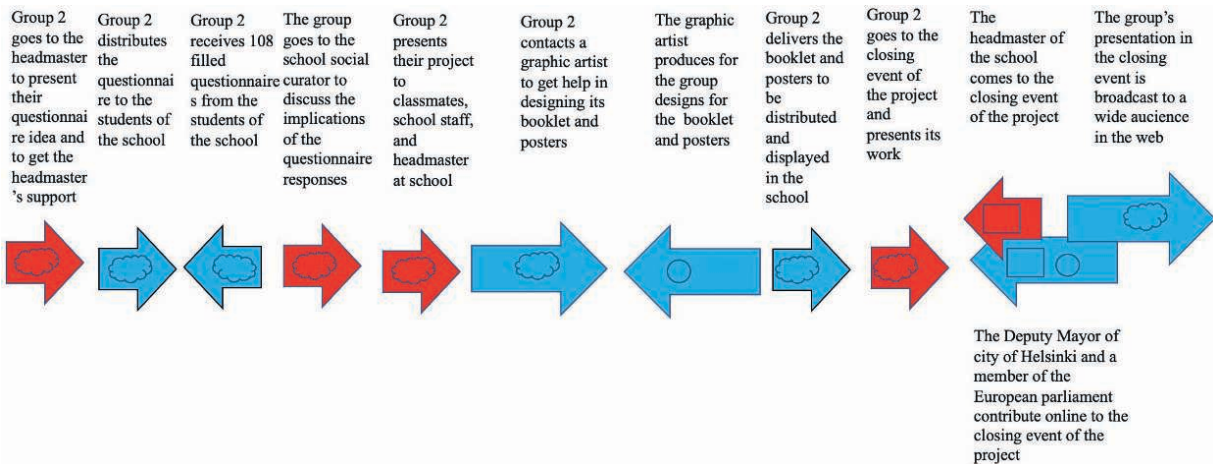


Figure 6. Trajectory of de-encapsulation and re-encapsulation actions taken within the project 'K-pop'

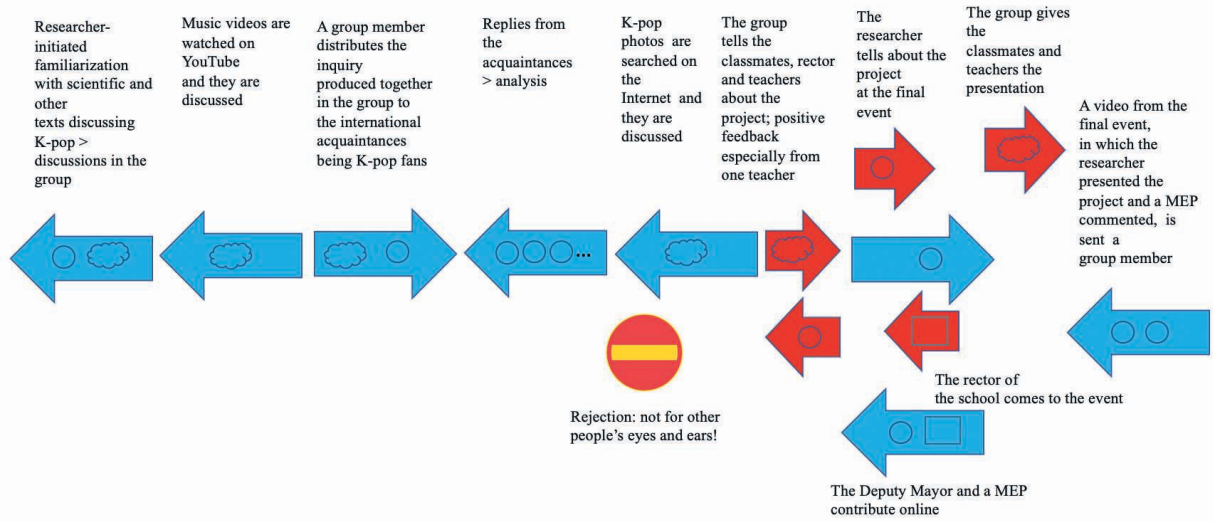


Figure 8. Trajectory of de-encapsulation actions taken within the project 'Everyone should be accepted as one's'

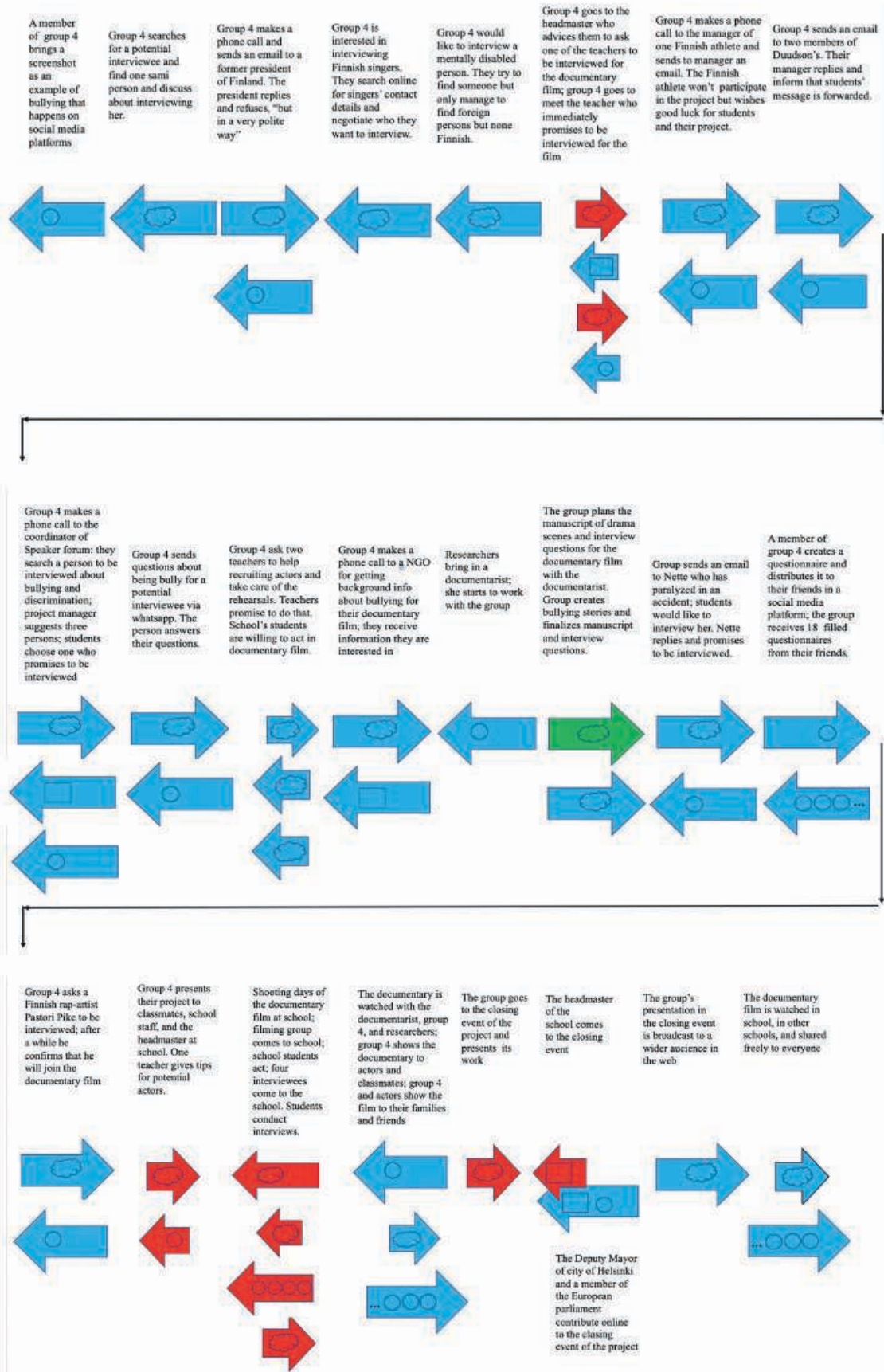
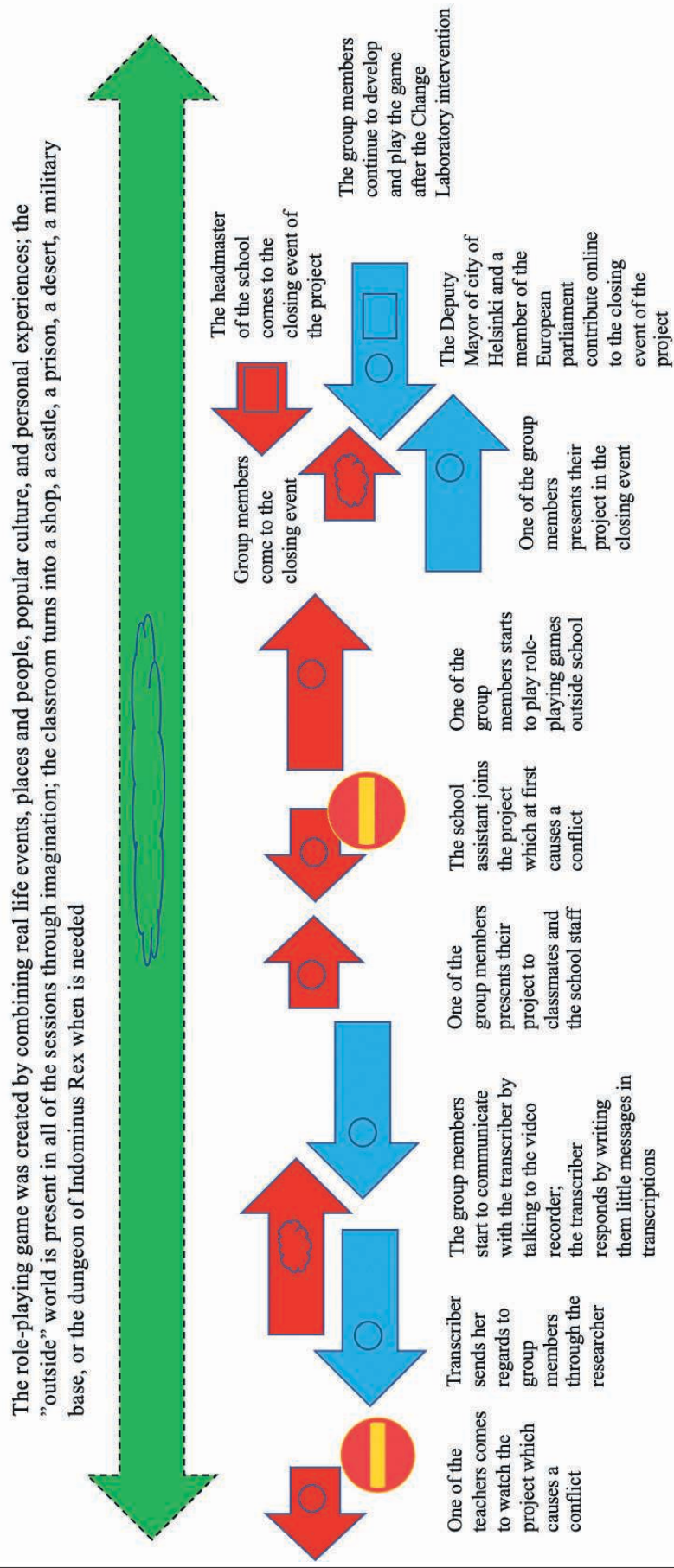


Figure 10. Trajectory of de-encapsulation and re-encapsulation actions taken within the project 'Brotherhood of Steel'



Student A: Thank you.

Transcriber writes back in the next transcript with an emoji: You are welcome [student's name], and you are an amazing group 😊

Members of this group reflected on their project in the final interviews.

Researcher: Yes, have some things that you've studied in school supported your project?

Student B: Mathematics.

Researcher: Mathematics, yes.

Student B: Mathematics. You have to know how to count. And Finnish language is pretty good, too, so that you know how to write and make no mistakes, that's pretty important. What else? Well, a free mind and a creative character. It is a bit, well, not an inborn thing, but you must have it. And what else? Well, Finnish language is the biggest thing, mathematics (...) This is more just the idea, that you get the feeling that, goddamn it, these three random guys did something like this. Something I have not done before, so why couldn't I do that! (Final interview with student, project group 'Brotherhood of Steel')

Student A: But it was super fun, as we did not have to do school work. Well, no, it was fun in the sense that I got to create something new and also my friends got to create their own things. Well, I am not sure how much they liked it, hopefully they did. But to be allowed to create something of one's own without restrictions. Well, there were restrictions, one could not do just anything. (Final interview with student, project group 'Brotherhood of Steel')

The latter excerpt is particularly illuminating in its oscillation between straightforward rejection of the standard mode of schooling (“*we did not have to do school work*”; “*without restrictions*”) and more nuanced consideration of what was actually accomplished in the project (“*I got to create something new*”; “*there were restrictions*”).

When the Change Laboratory process ended in this school and the other groups terminated their work, this project group continued playing and modifying the game.

DISCUSSION

Our first research question was: What kinds of possibilities for and limitations to de-encapsulation may be identified in student-led longitudinal projects hosted and supported by the school?

Table 3 gives a summary of the distributions of de-encapsulation actions taken in the four projects. The table shows that there was significant variation among the four projects. The project ‘Small action, big world’ was strongly outward oriented and acted as a tight group. The project ‘K-pop’ was more oriented to bringing in resources from the outside, and its actions were more frequently taken by individuals. The project ‘Everyone should be accepted as one is’ took an exceptionally large number of de-encapsulation actions, oriented equally outward and inward, and also quite evenly taken by the group and by individuals. Finally the project ‘Brotherhood of Steel’ was unique in its reliance of imagination. Its de-encapsulation actions outside those conducted within the medium of imagination were quite equally oriented outward and inward, and they were predominantly taken by individuals. In the first three projects, the de-encapsulation actions were most frequently accomplished with text and discourse. In the ‘Brotherhood of Steel’ project, the dominant vehicle was imagination; de-encapsulation actions outside those conducted within the medium of imagination involved movement of people more frequently than movement of text and discourse.

We find this diversity encouraging. It seems that there is a broad spectrum of possible student-led projects that can in a variety of ways involve and nourish actions of de-encapsulation. It is notable that none of the four project groups was unable or unwilling to engage in de-encapsulation. Some resistance to outward-oriented de-encapsulation actions was evident in the ‘K-pop’ group, and resistance to inward-oriented de-encapsulation actions inside the school community was manifested in the ‘Brotherhood of Steel’ group. But neither one of these groups remained closed or insulated; they found their own ways of pursuing de-encapsulation. This means that allowing students to create and lead their own projects has strong potential for the opening up of the school.

While student-led projects such as those analyzed in this article are an important step toward de-encapsulation, they have also clear limitations. First of all, with partial exception of the ‘Brotherhood of Steel’

project³, the projects we analyzed had relatively weak connections to the contents of regular instruction in different subjects. It was a deliberate decision to give the students as much power as possible to shape their projects, without demanding that they connect the projects to the contents, constraints and pressures of regular instruction. From the point of view of the school, this left the innermost capsule of the curricular subject matter largely unopened and unchallenged. We see such critical encounters between the students' own interests and the contents of instruction as a next step in this line of research and interventions.

Secondly, much in the same vein, the projects did not systematically involve teachers as collaborators. The researchers did not specifically ask the teachers to get involved in the projects. When a project group found it useful, they asked and some teachers supported the work in specific phases of the projects. The project group 'Everyone should be accepted as one is' interviewed one school staff member in a documentary film. Two teachers collaborated in recruiting the actors for the film and took care of the rehearsals. One teacher also acted in the documentary. Members of the 'Brotherhood of Steel' project were interested in playing their game outside the CL sessions and school staff members arranged room and time for students, enabling them to play during the school hours. The 'Small action, big world' group distributed a questionnaire to school students and students were allowed to answer it during their lessons. While these were important steps, having teachers more systematically engaged as collaborators could surely enrich the projects.

Thirdly, we had good experiences of useful and competent support to the projects from outside the school, but much needs to be done to make such collaboration a systematically supported strategy. Partnerships between schools and outside organizations tend to be administratively arranged and thus easily reproduce the top-down logic of standard schooling. Alternative types of partnerships need to be developed, for example between student-led collaborative projects and social movements, or between projects and grassroots community organizations, cooperatives and social enterprises. This is a stepwise development, as schools and principals may initially be timid to engage in collaboration with organizations working for equity, sustainability and social justice (DeMatthews & Tarlau, 2019).

The left-hand side of Figure 11 depicts what was accomplished in the Change Laboratory process analyzed in this article. The right-hand side of Figure 11 represents the possible next step in de-encapsulation, addressing the three limitations identified above. This image of the zone of proximal development indicates that de-encapsulation is more than breaking away. It is also entering into and finding traction both in classroom instruction and in potential partner activity systems outside the school.

The second research question of this study was: What kinds of methodological solutions and novel challenges are found in an effort to systematically analyze de-encapsulation in student-led longitudinal projects hosted and supported by the school?

The three-dimensional methodological framework summarized in Figure 2 worked well as a whole. As shown in Table 2, the analysis captured the rich diversity of actions and trajectories of de-encapsulation accomplished in the four projects. Obviously our analysis is still exploratory and further studies are needed to refine and solidify the framework.

The main methodological challenge arose in the analysis of the project 'Brotherhood of Steel'. This project group was immersed in a flow of joint imagining in which specific actions were difficult to identify and bound. However, as Murphy (2004) argues, joint imagining is not just internal and mental.

"...this form of imagining is always mediated by objects: not just mental objects, although surely they can play a part, but also by material, verbal, and gestural objects that all serve, in various ways, to help constitute the act of imagining. These objects are often used in combination with one another, in creative synthesis, to construct new meanings in settings that are often socially accomplished and shared." (Murphy, 2004, p. 277)

Murphy studied joint imagining in a group of architects, arguably a more organized and planned context than that of the adolescents constructing and playing a fantasy role-playing game. Yet Murphy talks about the joint imagining among the architects in terms of ongoing *activity*, not in terms of distinct identifiable *actions*.

In our analysis we purposefully used the notion of *flow* to describe the imagining that took place in the project group 'Brotherhood of Steel'. Csikszentmihalyi's (2014) concept of flow is described as a state of mind that occurs when a person

Table 3. Overview of the distributions of de-encapsulation actions in the four projects

	Direction of de-encapsulation action*		Subject of de-encapsulation action**			Vehicle of de-encapsulation action			Actions of re-encapsulation
	Outward	Inward	Individual	Group	Organization	People	Text, talk	Imagination	
Small action, big world	8(6/2)	4(2/2)	2	9	2	5	7	-	-
K-pop	5(3/2)	8(2/6)	8	6	2	5	8	-	1
Everyone should be accepted as one is	22(8/14)	27(7/20)	19	26	5	10	38	1	-
Brotherhood of Steel	5(2/3)	6(3/3)	8	2	2	7	4	Continuous bi-directional flow of actions of imagination	2

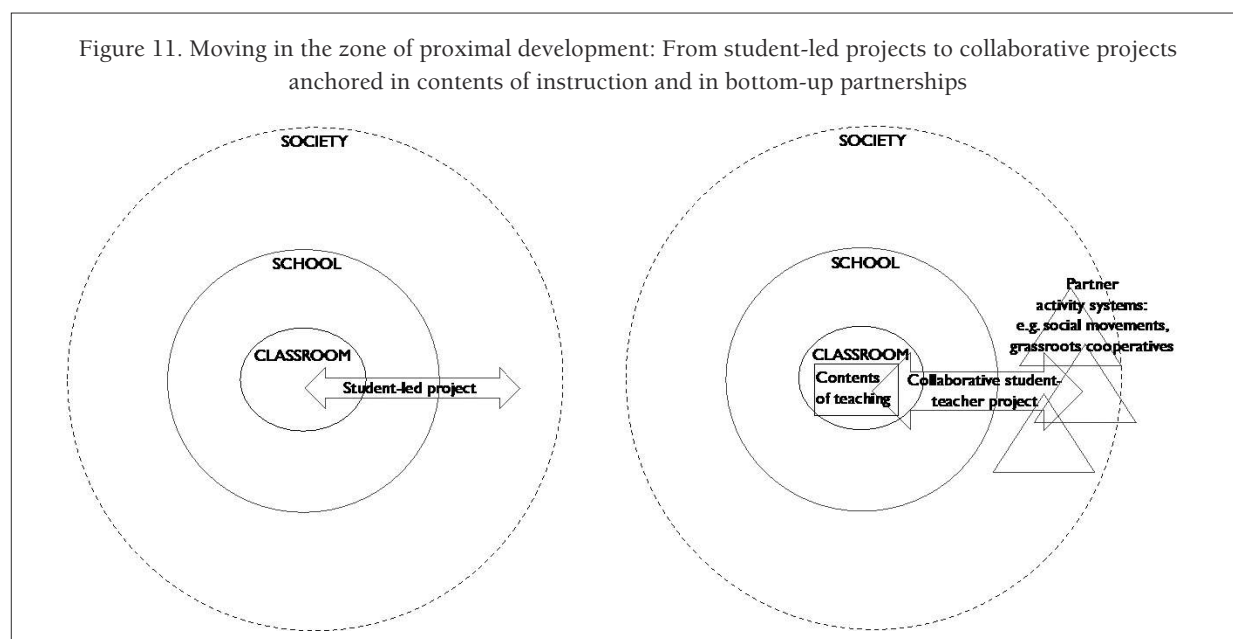
* The numbers in parenthesis indicate distribution between actions of moving between the classroom and the wider school (the first digit) and actions of moving between the school and the outside world (the second digit).

** The sum of actions for each project group in this dimension may exceed the total number of de-encapsulation actions taken by the group because some actions were coded as having been taken by more than one kind of subject, e.g., by both an individual coming from the outside and by the project group, acting together.

is totally immersed in an activity, or as the melting together of action and consciousness. Already these two common characterizations make it clear that, besides being foundationally about individual mental states and processes, Csikszentmihalyi's theory does not make a distinction between activity and action. In other words, it is of little use for our purpose of

analyzing materially mediated actions of collective imagining embedded in an emergent activity.

For us, the notion of flow is a placeholder for a more nuanced and robust understanding of how actions can be identified as entities in their own right and yet organically interconnected in an ongoing activity largely conducted by means of collective imagining, such as the creation and playing of a



fantasy role-playing game. Vygotsky's work on art and imagination may provide fertile resources for developing this endeavor (Vygotsky, 1971; 2004).

As a concluding note, we offer a response given in the final interview by one of the participants of the project 'Small action, big world'.

Researcher: Well, have this Change Laboratory and your project somehow connected to or influenced your own thoughts about the future?

Student A: Yes, I would say so.

Researcher: What kind of influence might they have had?

Student A: Well, maybe along with them I have somehow gained more hope about perhaps being able to impact things in some ways. And even if it is not big impact, it is still impact.

NOTES

1. There were actually five projects in this school. In this paper, we analyze four of these, as each of the four authors of the paper was responsible for one of them.
2. The project was inspired by the *Fallout 4* game world.
3. For example, teachers of the members of 'Brotherhood of Steel' took into account the work done in the project as grounds for elevating grades in the year's final report cards of the project members.

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