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‘CrEEd for Future Schools’

An actualization of the school improvement concept
CrEEd for Schools in consideration of epochal key problems

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This paper describes the inquiry-oriented improvement concept of *CrEEd for Schools* regarding pivotal characteristics, prototypical experiences, and findings concerning its impact on pupils’ learning experience and teachers’ instructional performance. A reflection of these experiences and findings collected during an implementation process conducted in an Austrian secondary school (2018–2019), motivates us to further rethink and to extend the conceptual architecture of *CrEEd for Schools*. We adjusted decisive conceptual components and integrated a concrete content layer into this inquiry-oriented approach – namely the sustainable development goals (SDGs). In doing so, we assume that the revised concept *CrEEd for Future Schools* will overcome the initial obstacles.

School improvement processes, inquiry learning, Emancipatory Learning Opportunities, Education for Sustainable Development

“... to think of things as if they could be otherwise.”
Maxine Greene, *Variations of a Blue Guitar*, 1997

Recognizing¹ current civil movements and worldwide activism for sustainability committed to a future-worth-living lead to take Maxine Greenes considerations into account. *To think of things as if they could be otherwise* is an inherent character of education for sustainable development (Siemer, Rammel, & Elmer, 2006; Blum, Nazir, & Go, 2013; Evans, 2020). And not

least, the discourse around school and its development models frequently leaves trodden paths and educational mainstream viewpoints (c.f. Rauch & Senger, 2009; Schratz 2009; Oyrer, Hesse, & Reitingner, 2020; Sonnleitner, Frey, Rank, & Munser-Kiefer, 2021). We introduce the school development concept *CrEEed* for schools (*Criteria-based Explorations in Education*), and simultaneously deconstruct and revise it throughout the following sections. It may represent one of these educational sidetracks as it proclaims being radically participation-oriented and bottom-up designed. To widen opportunities for ‘otherwise’ action, for inquiry learning, and for critical thinking about epochal key problems – and solutions – is the very mission of this concept.

Introduction

The paper at hand walks along three pivotal aspects of the current educational discourse and research. Firstly, it is concerned with the improvement of schools. We understand such processes as complex, incremental, and long-term developments that focus not only on teaching but also on learning (Steward, 2020). Secondly, this paper refers to inquiry learning, highlighting it as a fruitful didactic principle (Aulls & Shore, 2008; Paseka & Hinkze, 2018; Reitingner, 2013). Thirdly, it connects with Klafki’s (1996) concept of typical epochal key problems. Relating global changes and looming crises to Klafki’s theoretical considerations, we locate the necessity to integrate questions about future development and sustainability into the learning opportunities we offer to our pupils.

Intertwining these three lines of educational discourse and research, the following question arises: How can a school improvement concept be envisioned that pursues instructional development and classroom performance by offering inquiry-oriented learning opportunities on contents around sustainable development? Thereby, it is worth questioning whether the conventional construct of instruction is suitable to describe what will happen in future schools’ classrooms, as it is foreseeable that concerned teachers will be less challenged by teaching and instructing than by organizing participatory-oriented learning opportunities. Within such learning opportunities teachers may give pupils “a hand and a voice” (Rousell & Cutter-Mackenzie-Knowles, 2020, p. 203) and empower them to emancipate.

Emancipatory Learning Opportunities in the Context of Inquiry Learning and School Improvement

Inquiry learning is a long-debated educational principle (Dewey, 1933; Earl & Ussher, 2016), successively gaining more popularity in curricula, educational projects, and research (Pedaste et al., 2015). Inquiry learning opportunities allow learners to follow methods and practices to construct knowledge. Thereby, inquiry learning emphasizes active participation and reception of responsibility (de Jong & van Joolingen, 1998; Reitingner, 2013) within the processes of

investigation and knowledge construction. Nevertheless, different approaches refer in varying depths to the premise of participation.

The Theory of Inquiry Learning Arrangements

The *Theory of Inquiry Learning Arrangements* (TILA; Reitinger, 2013; Reitinger, Haberfellner, & Keplinger, 2016) is, indeed, radical in recognizing participation as fundamental for inquiry learning processes. TILA follows Dewey's (1933) conception of learning from experience and puts the autonomous, competence-oriented, and socially integrated person (Ryan & Deci, 2020) into the focus of educational endeavours. Being oriented towards reflecting and solving problems (Altrichter & Reitinger, 2019), this approach is relevant for individuals, social groups, or organizations. Thereby, it connects with Lewin's (1948) original considerations on action research (c.f. Feldman, Altrichter, Posch, & Somekh, 2018; Rauch, Zehetmeier, & Posch, 2019; Stern, 2019). Taking the core features of these theoretical anchors seriously, inquiry learning opportunities according to TILA, have to be understood as inherently participatory realms of experience. Going a step further, we would describe these as opportunities for the learners to grow independent from educators (Benner, 2015). Learners should have such opportunities to learn free of dictation and outer constraints (Biesta, 2010, 2017; Säfström, 2011; Waghid, 2014; Rieß, Mischo, & Waltner, 2018). Otherwise, they would hardly be able to widen their judgement and action-orchestrating competencies ('Urteils- und Handlungsentscheidungskompetenz'; Benner, von Oettingen, Peng, & Stepkowski, 2015). In other words, students should benefit from bringing in their demands, concerns, questions, visions, and judgements (Reitinger & Proyer, 2021). From this 'bildungs'-theoretical point of view (the German language term 'Bildungstheorie' refers to the scholarly debate of the issue of 'Bildung'; Benner, 2011; Klafki, 1999), inquiry learning according to TILA can be designated as an educational principle that flourishes within *Emancipatory Learning Opportunities* (ELOs {pl}; ELO {sg}; Reitinger, 2021; c.f. Reitinger, 2013).

Criteria of Inquiry Learning according to the Theory of Inquiry Learning Arrangements

The core features of TILA are the four inquiry-related and participation-oriented action domains, the so-called criteria of inquiry learning (Reitinger, Haberfellner, & Keplinger, 2016):

Experience-based hypothesizing characterizes the creation of personally relevant questions and suppositions on the basis of individual's preknowledge and previous learning experiences.

Authentic exploration means the very self-determined act of discovering auxiliary insights and viable solutions. This inquiry-related action domain embraces empirical investigation as well as thought experiments or mental reflective inquiring.

With *critical discourse* an inquiry-accompanying collaborative reflection is triggered in view on the learning process of which results and personal meaningful contexts are examined. In

this process, it helps to look into the viability of drafted inquiry perspectives or already found answers. Hence, the critical discourse conduces to the collaborative generation of “warranted assertibility” (Patry, 2008).

Conclusion-based transfer depicts the dissemination or application of personally relevant conceptions, experiences, insights, or results collected within the inquiry learning process. Decisions concerning kinds of dissemination are made by the learners themselves. Educators offering the inquiry learning opportunity do not instruct how to disseminate; they just coach through it.

In short, the approach *TILA* explains emancipatory inquiry learning opportunities as educational settings in which the above introduced criteria of inquiry learning evolve (Reitinger, 2013). Thereby, these criteria should be understood as features of learning opportunities, not as elements of any temporal schema. In other words, this theory does not define inquiry learning by referring to specific inquiry cycles or phases that have to be successively paced during the learning opportunities. This specific characteristic is unique and differentiates the approach *TILA* from most published concepts of inquiry learning (Aulls & Shore, 2008; Pedaste et al., 2015).

The Concept *CrEEd* for Schools

TILA can be transferred into educational practice via the concept of *Criteria-based Explorations in Education* (*CrEEd*, Reitinger, 2016, p. 25):

CrEEd can be interpreted as an experimental practice-oriented approach following a meta-intention derived from the Theory of inquiry Learning Arrangements (*TILA*). This meta-intention [...] amounts to the best possible unfolding of the Criteria of Inquiry Learning within a learning arrangement. Thereby, *CrEEd* does not predetermine any kind of methodology or specific strategy to achieve this goal.

In other words, the term ‘meta-intention’ refers to the primary, overall goal of the learning arrangement, affecting the outline, the performance as well as analysis and reflection of a lesson.

CrEEd describes the occurrence of the criteria of inquiry learning as a spectrum. Hence, the criteria may be performed in various degrees. They are not understood “dichotomously, in the sense of existing or not” (ibid., p. 26). The more the criteria of inquiry learning unfold in educational settings, the more inquiry learning occurs – regardless of which methods and social forms are therefore employed.

CrEEd for Schools (Reitinger & Oyrer, 2020) intertwines this experimental, meta-intentional conception with the idea of school improvement. School improvement starts with innovations in the classrooms (Rauch & Senger, 2009). Despite its focus, this mission to improve schools will target not only the development of classroom performance, but also the development of staff as well as the development of the organization itself (Holtappels & Rolff, 2004). Thereby, several groups of protagonists are involved (ibid.; Rolff, 2016), the pupils, the

teachers and their principal (headmaster), and – in some cases – an external support team of researchers that accompanies the school improvement process. *CrEEd for Schools* focuses on these three categories of groups, pursuing the target to enable inquiry learning opportunities for all protagonists – pupils, teachers, and the supporting team of researchers. In other words, the meta-intention to foster the evolvement of criteria of inquiry learning is not solely addressed to pupils, but to all involved protagonists (see Figure 1). Hence, at schools implementing this concept, all participating individuals work together under the equal premise of unfolding *Emancipatory Learning Opportunities (ELOs; Reitinger, 2021)* and experiences of inquiry in a collaborative and innovative manner (collaborative innovation; Corno & Randi, 1997).

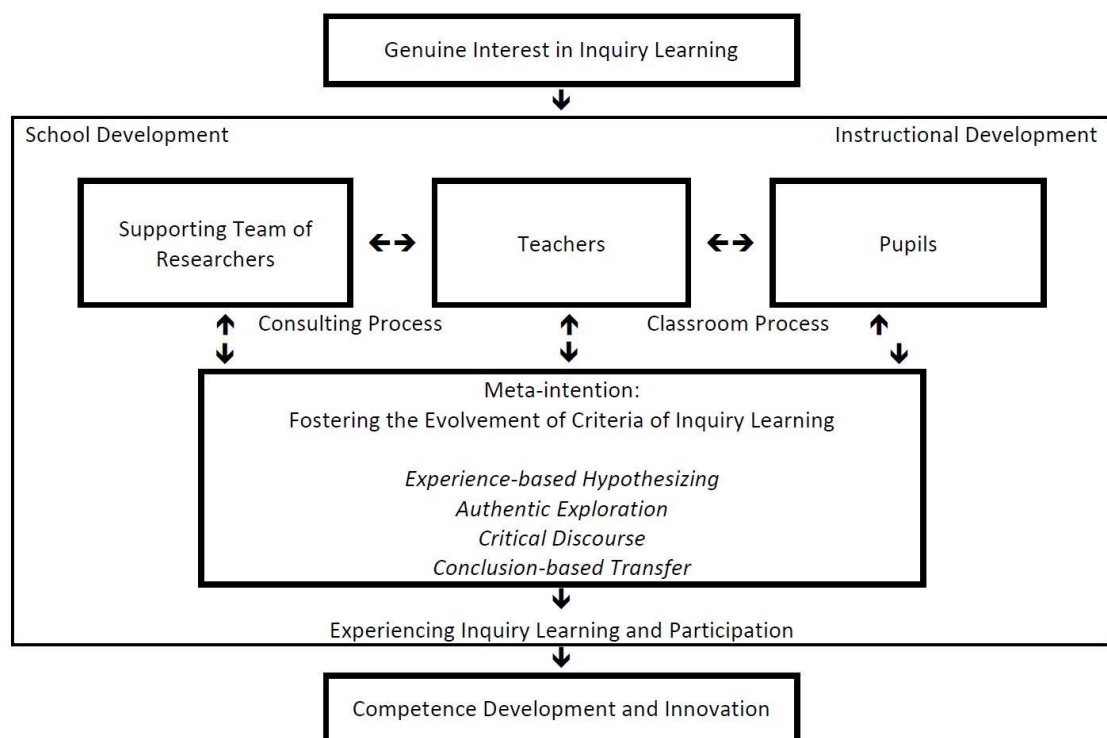


Figure 1: Structure of the Concept *CrEEd for Schools* (Reitinger & Oyrer, 2020)

An important requirement for a successful application of *CrEEd for Schools* is the genuine interest of the participating teachers in inquiry learning. Further, this concept requires an intensive collaboration between the involved teachers and a supporting team of researchers. The latter encourages reflective inquiry (Lyons, 2010; Earl & Ussher, 2016) and provides theoretical inputs as well as relevant feedback. Teachers, on the other hand, conceive themselves as “reflective practitioners” (Schön, 1983, 1987; Altrichter & Reitinger, 2010, p. 477–480) and further endeavour to create inquiry learning opportunities in the classrooms.

Herefrom, we expect a performance improvement of the classroom (competence development and innovation), of the teachers' professional competences, of researchers' action, and – not least – of schools themselves. But is there evidence to support this expectation?

Initial Research and Findings

Prototypical findings concerning the concept's impact on pupils' learning experience and teachers' classroom performance could be gained in the course of a research cooperation with an Austrian secondary school. A supporting team of researchers² from an Austrian teacher education institution (c.f. Oyrer, Hauer, Hesse, Keplinger, & Reitingner, 2021) accompanied several teachers interested in inquiry learning. The collaborative team made use of *CrEEed for Schools* to conceptualize and structure the initiated school improvement process. The common target was to foster inquiry learning with regard to all groups of protagonists (pupils, teachers, supporting team of researchers). Several consulting workshops were organized before and during the process in which eight teachers were arranging inquiry learning opportunities in 13 different classes. Thereby, they followed the meta-intention to unfold criteria of inquiry learning within the learning processes of their pupils as well as their own action. In doing so, the teachers went into individual action research processes (action-reflection cycles; Feldman, Altrichter, Posch, & Somekh, 2018; Altrichter & Reitingner, 2019).

From the beginning, this collaborative endeavour was endorsed by the principal (headmaster) of the school, though this person was not fully integrated in the collaborative processes.

This collaborative action research endeavour was accompanied by a mixed-methods study based on quantitative as well as qualitative data obtained by the supporting team of researchers. This study has already been published (Oyrer, Hauer, Hesse, Keplinger & Reitingner, 2021; for a detailed description of the school improvement project, the accompanying study, and its outcomes see the original publication accessible online³).

The mixed-methods design of this study embraces, on one hand, a quantitative survey ($N = 229$) to investigate the pupils' inquiry experience (evolvment of criteria of inquiry learning) within the arranged inquiry learning opportunities. For measurement, the 'SVF-Kurzskala' (a short scale to measure self-determined, trust-based, and inquiry-oriented learning experiences; Permanschlagner, Reitingner, Reitingner, Seyfried, & Waid, 2018) was used. On the other hand, qualitative content analyses of interviews with the involved teachers ($N = 7$; seven of eight involved teachers were willing to join an interview) were conducted.

In Table 1, the specified research questions as well as a compacted display of our findings can be found.

<i>Method</i>	<i>Research interests</i>	<i>Findings</i>
<i>Quantitative data analysis</i> (surveying pupils of 13 different classes; N = 229)	Do CrEEed learning arrangements lead to a stronger involvement of inquiry learning than conventional instruction?	- Findings show good – but no significant better – performance of the offered and investigated inquiry learning arrangements. - Teachers’ conventional instructions also perform good and are ‘inquiry-like’ (ceiling effect; Cramer & Howitt, 2004, p. 21).
	Do these criteria of inquiry learning evolve to different extents during the investigated CrEEed learning arrangements?	- Indeed, they do. Variations in involvement can be detected when comparing different teachers and classes. - Due to low sample size, no generalization can be stated.
<i>Qualitative data analysis</i> (interviewing pupils’ teachers; N = 7)	Which parameters are regarded by the teachers as being conducive to the involvement of the criteria of inquiry learning?	- Scholarly exchange with the supporting team of researchers - Communication with colleagues - Supportive conditions and resources (e.g., library, blocking of lessons) - Open and student-centered attitude and trustful mindset
	Which methods and procedures do teachers apply to foster inquiry learning?	- Application of films; image vignettes; texts; prototypical outcomes of former inquiry learning arrangements - Discussions; speculations about possible answers, posing new questions - Participating teachers express a kind of ‘helplessness’ in finding curricular contents and methods suitable for inquiry learning opportunities. Ergo, there is need for support and consultation.

Table 1: *Creed for School* in practice – design and findings from the pilot study (Oyrer, Hauer, Hesse, Keplinger & Reitingner, 2021)

Initial results (see Table 1) do not fully meet our expectations. Although a satisfying inquiry learning performance in the classrooms can be verified, there is no significant difference to conventional learning opportunities offered by the teachers participating in this pilot study. Furthermore, the range of applied and tested methods and procedures to foster inquiry learning is actually not a really wide one. These insights question the innovative momentum of the investigated learning opportunities as well as the sufficiency and impact of our allocated support. Summarized critically, these results prompt to reconsider the concept, as we will do in the following section.

Need for an Actualization

In sum, four concrete issues can be located within the described and investigated prototypical implication process of *CrEEd for Schools*.

Issue one: Teachers are challenged with finding curricular (inter)disciplinary contents that encourage pupils' inquiry learning processes successfully.

Issue two: The need for intensive support concerning the orchestration of inquiry learning opportunities on behalf of the teachers adds a challenging parameter to the supporting team of researchers.

Issue three: Within the primary layout, the important role of school principals is mentioned, but yet too less accented.

Issue four: Competence development on behalf of the pupils as well as innovation in general is just assumed, not evaluated.

These unveiled issues denote a need for an actualization of the original concept.

CrEEd for Future Schools – Connecting Education for Sustainable Development

How to overcome these issues, in the following section we introduce some new conceptual considerations that may pioneer the way to a follow-up concept. We name this successor simply *CrEEd for Future Schools* in consideration of its connection to an important future-oriented approach: Education for Sustainable Development (Evans, 2020; BMBWF, 2021).

Overcoming issue one: Consolidating the inquiry learning principle with a specific content: Education for Sustainable Development

The investigated original concept includes one single meta-intention: It is to unfold the criteria of inquiry learning within the offered learning opportunities at the best possible rate (Reitinger, 2016, p. 25; Reitinger & Oyrer, 2020, p. 19). Concerning curricular contents *CrEEd for Schools* leaves, instead, all doors open and does not target to take up on a specific position. Regarding teachers' worries about finding suitable topics and themes for their lessons, we believe that integrating a concrete content layer may be a good idea. Well suitable interdisciplinary contents may arise from typical epochal key problems. Referring to Klafki (1996) we recognize the integration of the discourse on epochal key problems into our educational endeavours as a necessity. At this point, the *Sustainable Development Goals (SDGs; United Nations, 2015)* supply a concrete framework (c.f. BMBF, 2014) as they include goals concerning several key problems that earn, indeed, the suffix 'epochal'. Connecting education with SDGs – be it gender equality, good health, climate action, or another one of the overall 17 goals – is a demanding challenge (Gyberg & Löfgren, 2016; Pürstinger, 2020; Möller, Kranz, Pürstinger, & Winter, 2021). However, the approach of *Education for Sustainable Development (ESD;*

UNESCO, 2020) is a key element when it comes to face and cope with these crucial challenges (Otto, Donges, Cremades, Bhowmik, & Hewitt, 2020). The pivotal objective of *Education for Sustainable Development* is to support the achievement of the SDGs (Rieß, Mischo, Waltner, 2018). Thereby, it aims to empower future generations and encourages changes in knowledge and attitudes (ibid.; Siemer, Rammel, & Elmer, 2006).

Returning to our actualized school improvement concept, we include the *SDGs* as a second meta-intention in our conceptual structure. In doing so, *Education for Sustainable Development* is included as a content layer and may help teachers – and supporting teams – to outline inquiry learning scenarios more accurately and effectively. Moreover, the support of the principal is crucial throughout the implementation of the improvement concept, prioritizing inquiry learning and *Education for Sustainable Development* at school. Their importance needs to be communicated to all educational staff, no matter if they take part in the process actively or not. Inquiry learning and sustainability cannot just exist on paper but need a certain commitment of the educational staff to be a major goal that needs to be realized. For practical implementation, resources such as minimal financial support or partial temporary release from teaching should be provided, allowing the involved teachers to focus on the new approach to teaching.

Referring to the above-mentioned emancipatory principle (c.f. Rieß, Mischo, & Waltner, 2018, p. 299; Rousell & Cutter-Mackenzie-Knowles, 2020) as well as the idea of an education free of dictations and outer constraints (Biesta, 2010, 2017; Säfström, 2011; Waghid, 2014), we call such ‘double-meta-intended’ scenarios *Emancipatory Learning Opportunities for Sustainable Development (SD-ELOs)*. Hereby, *SD-ELOs* represent the centerpiece of our revised concept.

Overcoming issue two: Intensifying support structures through collaborations with interested (under)graduate researchers

It is taken into consideration that the access to the multiple benefits achievable for the supporting team of researchers (e.g. dissemination of ideas, access to schools as research fields) requires abundance of time for forwarding the support processes. Also, more accompanying researchers might be needed to strengthen the implementation process and to increase the number of collaborations. In recognizing student teachers that are interested in classroom studies and collaborations with schools (c.f. Feyerer, Hirschenhauser, & Soukup-Altrichter, 2014; Schratz, 2020), we think about creating a digital network platform for inquiry-interested student teachers, researchers, and teachers at schools. Bringing more of these protagonists together, powerful supportive structures may evolve, e.g., collaborative formative evaluations of school improvement processes in the course of students’ writings of a scientific thesis, and other scenarios of (post)graduate research endeavours investigating developments in classrooms and schools in cooperation with involved teachers.

Overcoming issue three: Involving school principals directly and straightly into all collaborative endeavours

In contemporary literature significant arguments can be found that underpin the important role of these representatives (Blase, Blase, & Phillips, 2010; Nir & Hameiri, 2014; Schmerbauch, 2017, pp. 17–18; Schritteser, 2019). In the course of the pivotal application of *CrEEd for Schools* the figure of principal at the concerned pilot school promoted this project in a very proactive and favorable manner. We also assume that, although this principal was kept well informed perhaps was less integrated in the concrete implementation endeavours and workshop discourses. Therefore, a stronger and more direct involvement of school principals into the various discourses and development activities may strengthen the implementation processes of our school improvement concept.

Overcoming issue four: Evaluating competence development on behalf of the pupils as well as innovation in general

On the basis of our collected data, we are able to provide insights into the inquiry learning experience of the investigated pupils as well as the classroom innovations forwarded by the participating teachers. Nevertheless, at this moment, we cannot say anything about pupil's disciplinary and interdisciplinary competence development. In future research this outcome-oriented dimensions of investigation will have to be integrated (c.f. Rieß, Mischo, & Waltner, 2018, p. 304). In doing so, we will be able to describe not only what protagonists think about the improvement process but also what they learn throughout this process.

The Revised Structure of the Concept

Recognizing these considerations on a conceptual revision, we transfer the above depicted concept *CrEEd for Schools* (see Figure 1) into *CrEEd for Future Schools*. Figure 2 visualizes this actualization. The added conceptual features are highlighted with blue-colored lettering.

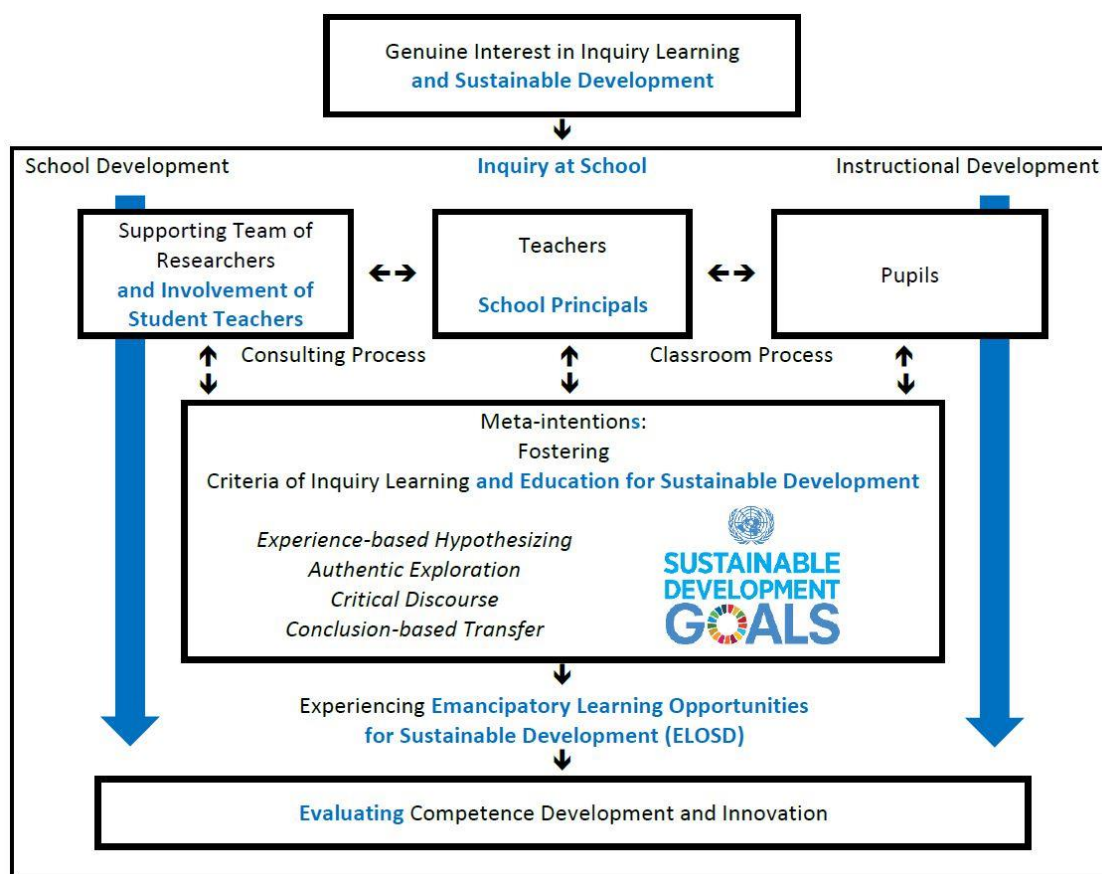


Figure 2: Structure of the Concept *CrEEd for Future Schools* – Connecting Inquiry Learning and Education for Sustainable Development

Conclusion and Perspective

We understand *CrEEd for Future Schools* as a conceptual result of an attempt to learn from an initial implementation endeavour. Nevertheless, it is neither implemented nor evaluated. In light of improving societal consciousness concerning global challenges (Otto, Donges, Cremades, Bhowmik, & Hewitt, 2020) as well as worldwide announced governmental interests in fostering *Education for Sustainable Development* (e.g., BMBWF, 2021), we hope that school improving concepts like ours will successively acquire greater traction. From our side, we remain engaged in implementing and evaluating *CrEEd for Future Schools* and would look forward to collaborating with interested teachers, school principals, students, and pupils around the world in further contributing to a future worth living.

That being the mission to be forwarded, our own *Emancipatory Learning Opportunity for Sustainable Development* awaits.

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Anmerkungen

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² The supporting team of researchers consisted of five persons. Two of them are among the authors of the paper at hand.

³ The described pilot study (Oyrer, Hauer, Hesse, Keplinger & Reitinger, 2021) is published in the journal *Pedagogical Horizons*, Vol. 5(2). The paper is free accessible and can be downloaded from <https://www.paedagogische-horizonte.at/index.php/ph/issue/view/10>

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