

# **Context and Implications Document for: How to guide effective student questioning: a review of teacher guidance in primary education**

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## **Authors' Introduction**

In recent decades, teachers, scholars and policy-makers have a growing interest in the potential of student questioning for learning and teaching. Research shows that student questioning elicits intrinsic motivation for learning, supports the development of cognitive and metacognitive skills and allows for differentiated and self-regulated learning (Chin & Osborne, 2008). Therefore, many countries have integrated inquiry-based pedagogy in domains such as science, literacy and numeracy (e.g. NCR, 2012). Unfortunately, student questioning remains rare in many classrooms, in spite of its acclaimed benefits and the positive stance many teachers have towards it (Reinsvold & Cochran, 2012). Arguably, one of the main causes for its absence, is that teachers find it difficult to allow for student questioning while facing curricular pressures (Wells, 2001). Teachers seem to need support to align student questioning to curriculum objectives, or in other words, to guide *effective* student questioning. This review explores the literature on student questioning in primary education since the 1990s to identify emergent themes that might support teacher guidance of effective student questioning. The intended audiences for this article are policy-makers, teacher-educators, educational designers, scholars and, last but not least, teachers. The four emergent themes that were identified in this study might have various implications for these audiences.

## **Implications for Policy**

The most important finding for policy-makers seems to be that a “core curriculum” is most effective for supporting effective student questioning. A core

curriculum offers both conceptual structure as well as freedom for teachers and students to explore the big ideas of a domain. A prescriptive curriculum, in which every detail of the domain is specified, is not likely to allow for student questioning and inquiry learning, but rather seems to enhance a “transmissive” style of teaching. When policy-makers worry about accountability and how to secure optimal learning outcomes when advocating a core curriculum, findings from reviewed studies may reassure them. In a core curriculum all major concepts of a domain can be mastered by allowing students to explore their meaning in relation to students’ personal interests and experiences. When teachers organise collective responsibility for this exploration of the domain by means of student questioning, curricular objectives are not only met but often surpassed (e.g. Hakkarainen, 2003; Brown & Campione, 1994).

A second implication for policy-makers might be to investigate the validity of the identified emergent themes for secondary education. The evidence for the themes was found in small-scale single or multiple case studies situated in primary education and similar patterns were found in various educational contexts. However, it is yet unclear if and how identified emergent themes might be valid for secondary education. Policy-makers could initiate projects, in which is explored to what extent the themes are suited to the secondary teachers’ needs for guiding effective student questioning.

A third implication for policy-makers might be to commission educational designers to develop learning environments which support effective student questioning, using the emergent themes as guiding design principles for this assignment. The designers might consider how to empower teachers to identify core curricula and seek methods for teachers to elicit authentic student questioning about the “big ideas” in these core curricula. Furthermore, educational designers could explore how teachers might organise collective responsibility for learning in their classrooms and how visual tools can enhance this collective effort to build knowledge about the core curriculum.

### **Implications for Practice**

As regard to implications for practice, we consider teachers to be our most important audience, for they face the challenge to integrate the emergent themes into classroom practice. Most likely, many teachers will need support to implement effective student questioning and we expect the emergent themes could support them in their guidance. However, we would like to stress that transforming classroom practice into a more inquiry-based pedagogy will not likely to be achieved by telling teachers what to do. To explore how the emergent themes could be brought to practice in the classroom, the authors initiated the development of a scenario for teacher guidance of effective student questioning (Stokhof *et al.*, 2016). A heterogeneous team of teachers, educational designers, teacher-educators and scholars collaborated in a design-based research project to explore what might be the practical implications of the emergent themes. Using several iterations of design, implementation and evaluation seems a fruitful way for professional development towards guiding effective student questioning in school practices. The scenario is available for further use in new contexts and can be used in a process of local adaptation.

## Resources for Teaching and Learning in Higher Education

For teacher-educators the findings on teacher characteristics, which support guidance of effective student questioning, might be most of interest. Teacher education is intended to prepare teachers for the educational practices of the future. From the perspective of the growing importance of inquiry-based pedagogies and of student questioning, there seems to be an urgent need for teachers who are willing and able to experiment with forms of student-centred and collective learning strategies. The review's findings suggest that guiding effective student questioning requires a confident teacher who can create a supportive classroom culture for question generation and who acknowledges the potential in all students' questions. Prerequisites for becoming such a teacher seem to be a profound domain knowledge combined with an inquisitive stance and a deep trust in the learning potential of students. Teacher-educators face the challenge how to support pre- and in-service teachers to develop such competencies and attitudes.

At HAN University the aforementioned scenario is adopted as one of the pedagogical approaches to prepare pre-service students for question-driven classroom practice. The scenario is presented to pre-service teachers as a tool to explore, together with their supervising in-service teachers, the possibilities for guiding effective student questioning.

### *Author Recommends*

- Beck, T. A. (1998) Are there any questions? One teacher's view of students and their questions in a fourth-grade classroom, *Teaching and Teacher Education*, 14(8), 871–886. doi:10.1016/S0742-051X(98)00035-3
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Zhang, J., Scardamalia, M., Reeve, R. & Messina, R. (2009) Designs for collective cognitive responsibility in knowledge-building communities, *The Journal of the Learning Sciences*, 18(1), 7–44. doi:10.1080/10508406.2011.528317

### *Useful Links*

The scenario for guiding effective student questioning: [https://www.researchgate.net/publication/271209376\\_Scenario\\_for\\_Supporting\\_Question-Driven\\_Learning\\_with\\_Digital\\_Mind\\_Mapping](https://www.researchgate.net/publication/271209376_Scenario_for_Supporting_Question-Driven_Learning_with_Digital_Mind_Mapping)

Theoretical underpinnings of the intrinsic motivation which can be enhanced by student questioning:

<http://selfdeterminationtheory.org/>

Big Ideas and knowledge building:

<http://ikit.org/kbi/knowledge-building>

Inspiration to empower students to ask questions

TedTalk Dan Rothstein: [https://www.youtube.com/watch?v=\\_JdczdsYBNA](https://www.youtube.com/watch?v=_JdczdsYBNA)

<http://amorebeautifulquestion.com/encouraging-student-questioning/>

<https://usergeneratededucation.wordpress.com/2013/03/24/learners-should-be-developing-their-own-essential-questions/>

### *Focus Questions*

- (1) Explore your pedagogical view: Do we want student questioning and more inquiry-based learning in our school?
- (2) Explore your pedagogical view: Do I think effective student questioning is feasible with our students in our schools?
- (3) Getting inspired: Can I find good practices of effective student questioning?
- (4) Getting prepared: What do core curricula look like?
- (5) Getting prepared: What does (digital) mindmapping in the classroom look like?

### *Seminar/Project Idea*

A suggestion to explore effective student questioning might have the following steps:

- (1) Prepare a mind map together with a colleague about a topic in your curriculum
- (2) Ask your students to generate questions about this topic
- (3) Try to relate the students' questions to the concepts in your mind map
- (4) Consider how the students' questions can contribute to learning the curriculum

## **References**

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