

Analyzing Special Needs Support through Networks and Learning Analytics in Primary Education

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Abstract

In this short paper, analytical issues of networked learning are related to special needs support and learning analytics research in primary education. Very brief suggestions for these analytical issues are discussed for the networked learning research field to continue to expand upon. In part, the discussion is intended to form the underpinnings of a work-in-progress research project with cross-disciplinary networked connections across multiple universities.

Currently, teachers are faced with an expansion of their professional role that may be too economically demanding, which may result in consequences that is not beneficial for children with special needs. Researchers that aim to study inclusive education face the challenge to represent findings in a way that does not increase workload for teachers in primary education. Any failings in this regard may strengthen the intertwining of educational results and economical interest, which to a large extent could be considered as opposed to networked learning theory, dualistically separated from pedagogical concerns.

The inclusive goal of addressing diversity for children with special needs may be promoted by providing an educational setting with networked connections that enhances variation to modes of behavior, by addressing specific and contextual strengths and challenges of students appropriately. With learning analytics, specific and contextual strengths and challenges of students might be easier to highlight with new database schemas, algorithms, and user interfaces to represent networked data. Radical behaviorist methodology may further emphasize specific contextual findings from primary education through strictly defined events of behavior, which may be of interest to the networked learning research community to further expand upon.

Thus, this paper proposes suggestions for networked learning research of primary education, with approaches commonly implemented in special education, such as radical behaviorist methodology. The suggestions are based on networked consequences from three social dimensions: political, economic, and technology-developmental.

- 1 The political dimension is discussed through the notion of inclusive education for children with special needs and its current state,
- 2 the economic dimension is discussed through the 21st century role expansion of teachers,
- 3 the technology-developmental dimension is discussed through learning analytic research and its connection to bodily and biological associations. This dimension is especially noteworthy, as learning analytics is currently underutilized in primary education research as opposed to common higher education research.

Keywords

Behaviorism; Connectivism; Elementary education; Evaluation methodologies; Improving classroom teaching; Inclusive education; Learning analytics; Special educational needs.

Aims and Objectives

This short paper aims to contribute to networked learning research by very brief suggestions for analytical issues. The paper suggests that networked learning research of primary education and learning analytics would benefit from approaches commonly implemented in special education, such as radical behaviorist methodology. The suggestions are intended as counter-balance to networked consequences that may oppose networked learning theory by dualistically separate pedagogical concerns from three social dimensions:

1. Political, related to inclusive education for children with special needs.
2. economical, related to the 21st century role expansion of teachers
3. technology-developmental, related to learning analytic research and its connection to bodily and biological associations.

In part, the aim is intended to form the underpinnings of a work-in-progress research project with joint networked connection to the Swedish National Graduate School for Digital Technologies in Education (GRADE). The research project could be considered as situated cross-disciplinary in an epistemic space, due to the relative but joint positions of other GRADE participants (Brodin & Avery, 2020).

Beyond Special Education: Educational Settings with Networked Connections

Organization of inclusive education on a collective level can become an ideal only withheld on policy papers, having decisions made daily with consequences in an opposite direction for children with special needs (Allodi, 2017). Despite calls for more diverse educational settings, common solutions often imply notions of customer choice that supposedly will boost educational quality (Oliveira, 2018; Uljens & Ylimaki, 2017). In such solutions, educational results and economical interest can be considered intertwined to an extent (Mølstad et al., 2018). Such intertwining may separate pedagogical and networked concerns crucial to education, as opposed to a holistic networked connection outlined in networked learning theory (Gourlay, Rodríguez-Illera, Gregori, & Bali, 2021).

Decisions made in the inclusive sense may instead focus on the characteristics and networked connections of the educational setting and the various causes it may serve to students' emotional symptoms. Naji (2014) and Assaél, et. al. (2018) claim that neuroscience today supports the view of cognitive and emotional functions as well established, with examples of causal relationships between their influences in a setting. In these instances, excluding students with certain special needs to separate classrooms may save resources but be counter-productive (Dovigo, 2017; Persson, 2007; Tesolin & Tsinakos, 2018).

Further, these influences entail the inclusion of students with special needs may go beyond matters of equity and brain development. Studies that have used complex brain scanning equipment indicate that positive emotions improve learning by helping the retention of previous developments (Olmos et al., 2017). This study may serve as an illustration of the fact that it is very difficult to separate the cause of certain special needs to either social disadvantage or brain development as these are better understood holistically through a transactional networked learning lens (Gourlay et al., 2021).

The inclusive goal of addressing diversity could be promoted by providing an educational setting with networked connections which enhances variation to modes of behavior, by addressing specific and contextual strengths and challenges of students appropriately (Hornby, 2014; Vansteenkiste et al., 2010). To this goal, primary education would benefit from research with approaches commonly implemented in special education, such as radical behaviorist methodology that emphasize specific contextual findings through strictly defined events of behavior (Gunnars, 2021).

Analytical Issues for Learning Analytics in Primary Education

Highlighting disability related support might imply a solution involving a more flexible and individualized version of the primary education classroom setting (Ferri & Ashby, 2017). However, thought-through tasks that let students participate to an increased extent may be too demanding for teachers, by expanding the role of the teacher to a facilitator in multiple networked processes simultaneously (Andreozzi & Pietrocarlo, 2017; Brokamp, 2017; Scardamalia & Bereiter, 2014). With the requirement of greater time and ability to master such flexible and dynamic educational settings, pushback have been made from both students and teacher alike (Dovigo & Rocco, 2017).

Further increases to knowledge demands have been brought about by amplified technological developments of the 21st century (Zbick et al., 2016). As a result, more domains are being intensively networked and data-led, sometimes solely based upon large-scale biometrical data with bodily and biological associations (Williamson, 2019). Learning analytics researchers approach methodologies in line with such developments that involve new database schemas, algorithms, and user interfaces to represent networked data (Buckingham Shum & Luckin, 2019). With learning analytics, specific and contextual strengths and challenges of students might be easier to highlight despite challenges large amounts of data entail.

However, common learning analytics approaches may solely depend on networked data representations from higher education digital platforms (Cukurova et al., 2020). Further, many stakeholders may expect research to be done primarily with common methodologies involving interviews, despite the clear potential for other learning analytics methodologies (Mahmoud Mai et al., 2020; Quick et al., 2020). As outlined in a large-scale literature review, this presents a clear gap in research of primary education that may be solved by a greater amount of learning analytics studies with approaches similar to radical behaviorist methodology (Gunnars, 2021). Networked learning research could with its clear holistic emphasis to joint networked research connections be highly suitable in providing the valuable nuance necessary to examine the findings of studies with such approaches.

Conclusions with Implications for Analytical Issues of Further Research

Any failings to alleviate issues in a networked and holistic manner may according to networked learning theory further strengthen dualistic findings, such as an intertwining of educational results and economical interest, separated from transactional networked learning research (Gourlay m.fl., 2021; Mølsted, Petterson, & Prøitz, 2018). This may result in pedagogical consequences that is not beneficial for children with special needs. The presented suggestions of this paper and their relation to current literature gaps for analytical issues of networked learning can be summarized through two conclusions with implications for further networked learning research:

- Radical behaviorist methodology benefit current research in primary education for special needs support
- Learning analytics research is currently highly relevant for networked analysis of primary education

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