Robust Self-Regulated Learning Skills Can Dramatically Improve Teacher Quality and Shrink Teacher Education Costs

Submission to the Initial Teacher Education Review

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Self-regulated learning skills can be rigorously taught and assessed

A teacher who is not a self-regulated learner lacks credibility. If teachers cannot manage their own learning, how can society be confident that they can manage others' learning? Self-regulated learning (SRL) has long been recognised as an ideal goal, and universities and schools have ad-hoc mechanisms and programs for teaching the elements of SRL. But the sciences that inform learning (generally grouped together into the interdisciplinary field of the Science of Learning [SoL]) have matured substantially in the last two decades, such that the skills for SRL (Oakley, 2014; Oakley & Sejnowski, 2014; Somasundaram, 2018) can be rigorously learned and assessed[1].

An argument can be made that SoL is already a part of a brimming curriculum for Initial Teacher Education (ITE) students; and that all that SRL does is add the methods of self-regulation. Our submission is that SRL and its subordinate theory and skills should be the core of the ITE curriculum, like the trunk of a tree from which other aspects of the curriculum branch and feed off. As just one example of developments in SoL, we now know that humans have two different and valuable ways of thinking: one that uses the brain's task positive network (TPN), and one that uses the default mode network (DMN) (Fox et al., 2005). Yet education virtually ignores the DMN[2], even though the DMN is essential for activities such as creativity (Oakley, 2014, 2017) and self-regulation (Wood, 2016; Wood et al., 2021).

Furthermore, there are two crucial implications for ITE (and subsequent teacher education). Firstly, once we can expect all ITE students to be SRLs, then delivery mechanisms can change dramatically, with a substantial reduction in costs – perhaps as much as a third of current costs (Somasundaram et al., 2006).

The reduction in costs is largely due firstly to reducing the substantial direct teaching/training costs and secondly to efficiencies of scale. However, realising these savings requires greater investment in establishing detailed national curricula, detailed learning materials (and formative instruments), and summative assessments for progression and credentialling. The UK offers a similar independent learning pathway for some of their professions – that is, students can either choose a standard university course or an independent pathway. However, there is no explicit requirement for students following the independent pathway to demonstrate self-regulation skills, and failure

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[1] The importance of including assessment instruments when designing instruction cannot be over-emphasized. Formative instruments are crucial for developing expertise. Summative instruments ensure students do not move on until the material has been consolidated. Assessment instruments also enforce quality on the instructions themselves, ensuring that the instruction is unambiguous and can be learned.

[2] In contrast to education, economies has a developed a substantial new field of behavioural economics, psychology has developed cognitive behaviour therapy, and software engineering applies analogous principles in designing artificial neural networks.

rates are substantially higher than for students in university units. Whichever pathway students choose, it makes sense to require all ITE students to demonstrate substantial SRL skills prior to or soon after enrolment. The independent pathway can be up to a third of the cost of a comparable university course.

The benefits of SRL are not merely economic. Students gain much greater flexibility. They can gain teaching credentials while engaged in other pursuits and employment. Students can vary their speed of progress as they manage other life events. There is a substantial transfer of control (and responsibility) from the institution to the student.

Secondly, the sciences that inform learning are likely to continue to mature quickly over the coming decades. Teachers will be able to translate both current developments into practice more effectively if they had a better grounding in these sciences. In other applied sciences like medicine and engineering, students are required to study core theory such as biochemistry and thermodynamics respectively. The ITE curriculum should include multiple units of neuroscience .

Classroom management requires exceptional emotional and interpersonal skills

There is no other profession that demands as much from fresh graduates as teaching does. Firstly, a teacher is expected to continuously manage an average of 25 children. Fresh graduates in some professions may be given supervisory responsibilities, but these are typically only a handful of direct subordinates, and the need for control is neither simultaneous nor continuous. Taking over a group of adults who are settled in their jobs is very different from taking charge of a class of children just back from their holidays. Classroom management demands exceptional skills.

Most professions do not expect fresh graduates to be productive from the first day of their job. Consider the field of medicine. School leavers need to be in the first 1-5% to be selected for medicine. They then undergo five to seven years of university education. They then work for two to three years as an intern and resident in a hospital before being accepted into a college training program, where they undergo three to five years of further training under a supervisor before they are considered capable of operating fully independently. Are we expecting too much of beginning teachers?

The basis of classroom management is emotional and interpersonal skills. Staying relaxed while calming a big, angry teenager; noticing an inattentive group at the back of a class, and getting their attention back to the lesson by simply moving into their midst while continuing the lesson; or interpreting the body language of a child from a different sociocultural background - these are the skills of an expert teacher that they learn on the job. Again, our knowledge informing emotional and interpersonal skills have matured rapidly, and instruction can be systematically designed[3].

[3] An example of a curriculum for emotional and interpersonal skills at the school level is the RULER program developed by Yale University (Nathanson et al., 2016). Emotional and interpersonal skills are probably biologically primary (Sweller, 2008), and we know that there are dedicated neural networks (such as mirror neurons (Likowski et al., 2012) and dominance hierarchies (Chiao, 2010) for aspects of their operation. It is therefore likely that the sensitive period (the period of greatest neuroplasticity) for the relevant circuits occurs in the first thousand days of life, long before schooling. This means that when children begin schooling, formative assessments are crucial so that maladaptive behaviours can be unlearned and corrected. By adulthood, many of the sensory-motor operations used in emotional and interpersonal activities are partly subliminal. Tools such as emotion-reading artificial intelligence will become useful in curriculum delivery.

Summary

Elements for the skills for (1) self-regulated learning, (2) emotional management, and (3) interpersonal management are already taught in the ITE curriculum, but typically in an ad-hoc and piecemeal way. The three are core skills for teachers, for their own personal well-being and development, as well as in the practice of teaching and classroom management. Our understanding of the underlying biology for the operation of these skills has matured rapidly in the last two decades. These three skills can be rigorously taught and assessed. Teaching these skills as the foundational basis of ITE will deliver order-of-magnitude benefits to education.

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