Executive function during teacher preparation

Roisin P. Corcoran*, Joanne O’Flaherty

*School of Education, Johns Hopkins University, United States
bSchool of Education, University of Limerick, Limerick, Ireland

Abstract

This three-year study examined executive function development during teacher preparation. The sample consisted of 231 students in spring at Time 1, 36 students at Time 2, and 109 students at Time 3. Results indicate a non-significant decrease in the longitudinal mean change of metacognition index (MI) and behavioural regulation index (BRI) over time. MI growth trajectories had a nonlinear trend, while BRI growth trajectories had a linear trend during pre-service teacher preparation. Findings from the current study suggest that no value is added to students’ executive functioning during three years of tertiary education. Implications for teacher preparation programs are discussed.

1. Introduction

In a world where globalisation, international competitiveness, and new technologies have resulted in the move towards neoliberal education policies, it is commonplace to assert that school systems are only as good as the teachers who populate them. As Sahlberg (2012, p. 1) asserts, “research and experience both suggest one factor that trumps all others: excellent teachers”. Musset (2010) highlights the important link between teacher preparation and student outcomes, echoing OECD (2005, p. 26) findings which suggest that ‘quality of teaching’ has been found to be “the single most important school variable influencing student achievement,” thus intensifying the investigation of teacher preparation programs. Many OECD member countries including the United States, the United Kingdom, Australia, New Zealand, Turkey and the Netherlands, have experienced problems attracting and retaining effective teachers (McKenzie, Santiago, Sliwka, & Hiroyuki, 2005). As a result teachers’ preparation and understanding of student needs and appropriate teaching strategies have proven to be critical factors to their practice (Musset, 2010; Wayne & Youngs, 2003).

A growing number of education researchers and practitioners assert that explicit, systematic integration of executive function—more broadly social and emotional learning (SEL)—in teacher educator programs is at the forefront of efforts to revitalize teacher education. Yet, because of the current focus on teacher quality, SEL is marginalized in most teacher education programs (Bridgeland, Bruce, & Hariharan, 2013; Fleming & Bay, 2004). Researchers in the field of educational psychology have long promoted the importance of executive function for student learning. Moreover, a number of U.S. states have adopted SEL standards or guidelines for the implementation of SEL in school districts. However, in most cases there is a gap between these standards or guidelines, and what is happening in pre-service teacher education (Jones & Bouffard, 2012). Moreover, whilst executive function is often examined in primary and secondary education to explain academic performance it has never been reported longitudinally and/or during teacher preparation. The premise of this study was to

* Corresponding author.
E-mail addresses: roisin.corcoran@aya.yale.edu (R.P. Corcoran), joanne.oflaherty@ul.ie (J. O’Flaherty).
examine the executive function of pre-service teachers longitudi-
nally during their teacher preparation program.

In the next section, the conceptual framework for the research is
clarified including discussion of the dependent variable—executive
function. This shows that there is evidence to suggest that working
with student teachers' executive function is likely to be an impor-
tant aspect in developing teaching skills. This study also addressed
potential questions including the relationships between executive
function and student outcomes. The research is located in its local
and international context. Afterwards, the methodology used in the
research is described along with the Behaviour Rating Inventory of
Executive Function-Adult Version (BRIEF-A; Roth, Isquith, & Gioia,
2005a). Finally, the findings from this longitudinal study on exec-
utive function are reported and possible interpretations of these
findings are explored.

2. Conceptual framework

2.1. Executive function

Traditionally, memorization has been the method used to assess
learning. Remembering facts and figures and being able to replicate
this content on demand was how successful learning was
measured. However, contemporary research has conceptualized
learning in a broader way—as a process of developing adaptive
competence (or adaptive expertise). This means that while
memorization is part of learning, it does not fully encompass
learning. Early research focused on the role of practice and repe-
tition and the value of rewards and punishments in learning. This
research has strongly influenced the way we do schooling. Contempo-
rary research has placed more of an emphasis on the role of
understanding in learning. People become better learners when
they understand the way in which they learn. They also become
better at applying their learning to new contexts and problems.

Over the past three decades, research in educational psychology
has identified a set of powerful executive function strategies that
have been found to help students comprehend difficult material
and to study and retain information (Collins, Dickson, Simmons, &
Kame‘enui, 2003; Gioia, Isquith, Guy, & Kenworthy, 2000; Pressley
& Woloshyn, 1995). Executive Functioning (EF) pertains to a variety
of higher order thinking processes (e.g., attention, self-control,
planning, and decision making) that are necessary for purposeful,
goal-directed behaviour (Shonkoff & Phillips, 2000). The ability
to regulate these processes is referred to as executive control
(Derryberry, 2002; Perner & Lang, 1999) and is essential to adaptive
functioning throughout one’s lifespan (Shonkoff & Phillips, 2000).
A related body of research has identified means of teaching stu-
dents strategies for self-regulation, such as monitoring their own
comprehension and setting their own learning goals (Paris & Paris,
2001; Schunk & Zimmerman, 2003). The rising public awareness of
the importance of executive function has resulted in the develop-
ment and implementation of many school-based interventions
designed to promote student outcomes such as academic
achievement and executive function (Maynard, Solis, & Miller,
2014; Randolph, Rosenstein, & Michaels, 2014). Specific strategies
that have been particularly well researched are as follows.

- Evidence supports students summarization of previously read
  information as an effective executive function strategy
  Taylor & Beach, 1984). Summarizing information using
or with peers (Dansereau, 1988; Fantuzzo, Polite, & Grayson, 1990;
  O’Donnell, 1996; 2000; Meloth & Deering, 1992; 1994) have
been implemented widely and demonstrated evidence of
effectiveness.
- Visualization and imagery have found to be effective and have
  been studied extensively (Gambrell & Bales, 1986; Hattie, Biggs,
  & Purdie, 1996; Pressley, Levin, & Delaney, 1982).
- A widely used comprehension and vocabulary development
  teaching strategy involves students generating questions about
  material as they read (Beck & McKeown, 2001; Davey & McBride,
  1986; King, 1994). Research shows that students’
  activation of prior knowledge through questioning and then
  relating this to current material increases comprehension
- Evidence has shown the achievement benefits of self-regulatory
  strategies (Schunk & Swartz, 1993), including self-verbalization
  (Schunk & Cox, 1986), and self-monitoring (Zimmerman,
found that self-regulation strategies accounted for as much as
93% of the variance in student performance on standardized
examined the impact of an intervention with eighth grade stu-
dents. Results from a randomised experiment suggest that
these strategies demonstrated significantly higher achieve-
ment and self-regulated learning outcomes.

At the same time, education policies are increasingly supportive
of the use of programs with strong evidence of effectiveness (WWC
Standards Handbook Version 3.0; WWC, 2014), especially in high
poverty schools (Title I, Part A, of the Elementary and Secondary
Education Act outlines schools with percentages of students from
low-income families of at least 40% may use Title I funds, along with
other Federal, State, and local funds, to operate a schoolwide pro-
gram to upgrade the instructional program for the whole school).
Since these policy and practice changes, there has been general
agreement that teachers should effectively implement executive
function strategies, and a consensus that such strategies should be
taught using programs and practices that have demonstrated
strong evidence of effectiveness. Yet beyond this broad agreement,
what do we really know about teachers and beginning teachers
own levels and trajectories of executive function? There exists no
study to date that examines pre-service teachers’ executive func-
tion trajectories.

2.2. Teachers’ executive function

A growing body of evidence suggests the ability to work with
behaviour and emotion regulation is an important part of the
teachers’ skill set. The emotional competencies of teachers have
been found to influence the climate of their classrooms (Corcoran
& Tormey, 2012a; 2012b; 2013), and students’ academic performance
(Baker, 1999; Battistich, Schaps, Watson, Solomon, & Lewis, 2000;
Durlak, Weissberg, Dymnicki, Taylor & Schellinger, 2011; Wentzel,
2002; Zins, Bloodworth, Weissberg, & Walberg, 2007), Anderson
(2002) highlights that the teachers’ ability to understand and
regulate cognitive processes may be one of the most essential
competencies of a classroom teacher. Within their professional
practice, teachers contend with high level decisions regarding
curriculum content, selection of appropriate teaching methods,
 inclusion/exclusion, pupil differentiation, and school discipline
(Abbott and MacTaggart, 2010; Conway, Murphy, Rath, & Hall,
2009; Gleson & O’Flaherty, 2016; Hansen, 2001; Mahony, 2009;
Noddings, 1987; O’Flaherty & Glesson, 2017). Goodlad, Soder, and
Strontik (1980) identify a number of potentially unsettling ques-
tions that teachers navigate throughout their practice including
exploring issues pertaining to freedom and autonomy, using au-
thority to pursue change in the lives of young people, and accepting
دریافت فوری متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات