Leah O'Toole

Cooperative learning in Initial Teacher Education: student experiences

MUZEUM HISTORII POLSKI

Leah O'Toole
Marino Institute of Education (Ireland)
leah.otoole@mie.ie

Cooperative learning in Initial Teacher Education: student experiences

Summary

The benefits of cooperative approaches to teaching and learning are extensively documented (Blatchford et al. 2003; Dillenbourg and Schneider 1995; Hmelo-Silver et al. 2013; Johnson and Johnson 1990, 1991 1994; Neber, Finsterwald and Urban 2001; Rojas-Drummond and Mercer 2003; Ruys et al. 2010; Sapon-Shevin 2004; Slavin 1995; van Aalst 2013; Veenman et al. 2000, 2005; Vygotsky1978), but in spite of this, such methods appear to be largely under-utilised in Initial Teacher Education (ITE) (Ruys et al. 2010; Ryan and O'Toole 2013). This often means that, drawing on their `apprenticeship of observation` (Lortie 1975, 2002), student teachers tend not to use such approaches with children (Bąbka 2012), perhaps due to low self-efficacy beliefs about implementing group work in classrooms (Ruys et al. ibid) and so the `social pedagogic potential` of classroom and indeed university-based learning is therefore unrealised (Blatchford et al. 2003). This paper reports the insights of a cohort of student teachers on their experiences of an integrated, cooperative approach to the teaching and assessment of Psychology and Sociology in Initial Teacher Education in Ireland. In spite of some challenges in terms of logistics, the findings are overwhelmingly positive, with benefits of cooperative learning including deeper and more meaningful learning than in individualistic or competitive approaches, greater application of theory to practice, stronger motivation and more enjoyment of learning on behalf of students, more integrated inter-disciplinary thinking, improvements in academic self-efficacy beliefs and self-confidence, and stronger critical engagement with material.

Keywords: cooperative approach to teaching and learning, student teachers, views on the experience of the integrated teaching

Introduction

> Cooperative learning strategies "are effective, involve mutual engagement with learning goals, distribute effort and lead to collective learning outcomes that surpass what students can accomplish solo."
>
> (van Aalst 2013: 291)

Veenman et al. (2000: 281) define cooperative learning as "refer[ring] to any of a variety of teaching methods in which pupils are placed in small groups to help one another learn academic content". The use of group-based 'cooperative-learning' approaches draws on

an extensive literature tradition, and according to Johnson and Johnson (1999: 72), the idea that working together to achieve a common goal produces greater achievement, creativity and productivity than working alone is "so well confirmed by so much research that it stands as one of the strongest principles of social and organisational psychology" (see for example Blatchford et al. 2003; Dillenbourg and Schneider 1995; Hmelo-Silver et al. 2013; Johnson and Johnson 1990, 1991; Neber, Finsterwald and Urban 2001; Rojas-Drummond and Mercer 2003; Ruys et al. 2010; Sapon-Shevin 2004; Slavin 1995; van Aalst 2013; Veenman et al. 2000, 2005; Vygotsky 1978). Within a cooperative model, students discover and generate knowledge in a social environment, which supports social facilitation, externalisation of thinking processes and also mutual and social monitoring of learning (Dillenbourg and Schneider 1995). Neber, Finsterwald and Urban (2001) combined the results of 12 studies to show that, in spite of some limitations, research generally shows that cooperative learning results in higher achievements and more positive academic self-concepts, so that cooperative learning has positive cognitive, motivational and social outcomes. Bąbka (2012) also emphasises the motivational impact of cooperative approaches. Working with people of differing abilities enables productive social conflicts and knowledge-generated activities (Dillenbourg and Schneider 1995), and Veenman et al.'s (2000) study reported improved social skills, on-task behaviour and pupil self-esteem through group work. This reinforces the importance of social knowledge (Nowak-Łojewska 2009) and social learning (Vygotsky 1978) – if one tries to explain something to a group member, one's own learning will often benefit because one needs to reorganise or clarify the material in order to explain it, and so one understands it better. One may also discover gaps in one's own knowledge or notice that one's knowledge does not always match that of others, and trying to correct this can lead to a cognitive restructuring that helps with learning (Kourilsky and Wittrock 1992; Webb and Farivar 1999). The purpose of cooperative learning groups is to make each member a stronger individual in his or her own right, and after participating in a cooperative lesson, group members should be better prepared to complete similar tasks by themselves (Slavin 1995). As Lev Vygotsky (1962) has pointed out, what children (and in this case student teachers) can do together today, they can do alone tomorrow. As such, van Aalst (2013; 291) maintains that "in a 21st century educational world-view, collaborative learning is no longer an instructional *choice* but a necessity."

In spite of this, however, according to Ruys et al. (2010), student teachers rarely get the opportunity to learn cooperatively in Initial Teacher Education (ITE). As a result, drawing on their 'apprenticeship of observation' (Lortie 1975, 2002), they tend not to use such approaches with children (Bąbka 2012), perhaps due to low self-efficacy beliefs about implementing group work in classrooms (Ruys et al. ibid) and so the 'social pedagogic potential' of classroom and indeed university-based learning is therefore unrealized (Blatchford et al. 2003). This is particularly unfortunate since Rolheiser and Anderson (2004) have shown that group-work in ITE can facilitate understanding of course-work, enhance understanding of learning processes for their own students, and prepare students

for working with peers in future careers. According to these authors, norms of collegiality and cooperation even continue into teaching careers post-ITE, and Brody and Nagel (2004: 34) reinforce the importance of this, indicating that, "A teacher's ability to work effectively as a team member is a skill critical in school settings".

Thus, as Ryan and O'Toole (2013) have pointed out, there are often significant gaps between rhetoric and reality in ITE, with certain approaches and understandings required of student teachers, while fundamentally different approaches and understandings are sometimes modelled by their lecturers. For example (Ryan and O'Toole ibid), students are generally required to demonstrate recognition of situated learning for children, while lecturers in ITE often present various theories and concepts in lectures removed from the application of these theories and concepts. Student teachers are often told through 'chalk and talk' lecture-style presentations about the importance of developing active learning tasks for children. The importance of constructivist approaches to supporting self-directed learning in children is highlighted, along with emphasis on creative and diverse assessment techniques, and use of cooperative learning with a view of learners as active social constructors, while at the same time lecturers in ITE employ behaviourist approaches involving memorising and regurgitating information, exams and competitive, individualised learning. As Anderson et al. (1995: 146) put it,

> Schools struggle to prepare pupils for a world in which the capacities to solve problems, guide one's own learning and collaborate with others are more important for the workplace than ever before. Thus today's prospective teachers are being asked to teach and learn in ways that seem novel and even risky, adding to the uncertainty they feel when they begin to teach.

Psychology and Sociology in Marino Institute of Education:
a model of cooperative learning

According to Sharan (2004: X) it is important for faculty at third level to work cooperatively in planning, designing and reflecting on the effectiveness of teacher education programmes – "By working within their own cooperative culture, they model cooperative learning values and strategies in their own work, and enhance the cooperative element of students' learning experience." Rolheiser and Anderson (2004) agree, indicating that the most powerful means of learning for student teachers is through modelling by lecturers, and that the image of educators who work individually is outdated. Rather, they argue, we need a "more complex image of teachers as interdependent professionals working collaboratively with one another and with other partners in education" (ibid: 13). Based on these understandings, the author of this paper along with her colleague Dr Anne Ryan in the Marino Institute of Education, Dublin, Ireland, has since September 2011 employed an integrated, collaborative approach to teaching and assessment in Sociology and Psychology for postgraduate students in ITE. This approach was extended to undergraduate students in September 2013.

Prior to the introduction of the processes described in this paper, students in this College of Education were traditionally introduced to concepts in Psychology and Sociology in a fragmented, de-contextualised manner, and were assessed through two separate three-hour long, end of year, written examinations in each discipline (Ryan and O'Toole 2013). The new and innovative approaches now see the students required to work cooperatively in small groups on integrated themes presented by the course tutors. In integrating course content in Psychology and Sociology, two themes emerged: Theme 1 ('Knowledge') addresses understandings of 'learning', 'intelligence' and 'ability' and their consequences for pedagogy. Across the two disciplines, behaviourist, cognitivist and constructivist theories are explored alongside notions of 'IQ', with reference to the school performance of different social classes, the practical organisation and grouping of children for learning and student-centred teaching. In Theme 2 ('Teacher as Change Agent'), this interdisciplinary approach is furthered to enable students to consider salient 'Psychological' and 'Sociological' topics, for example social class; motivation; equality of educational opportunity; hidden curriculum/ teacher expectations, parental involvement in education, giftedness, teaching styles and classroom climate. This integrated approach aims to deepen and broaden students' thinking, stimulating interrogation of implicit assumptions about factors contributing to children's educational achievement/ underachievement, and facilitating understanding of the child in context (Bronfenbrenner and Morris, 1998). The students work together in groups to develop their understanding of the material presented in lectures, and these groups are then assessed by presenting orally on this study to the course tutors, who follow by engaging them in in-depth discussion and questioning on these presentations. These events take place immediately after students have returned to college from a teaching practice school placement. Thus the students are encouraged and facilitated in their presentations to demonstrate how their theoretical learning relates to their developing practical knowledge and experience of children and schools. As such, the approach takes account of contemporary learning theories which emphasise the 'situated' nature of knowledge (Sawyer 2006; Collins 2006; Greeno et al. 1996; Bruner 1996; Vygotsky 1978). For undergraduates, there is one presentation required per year, whereas for postgraduate students, these presentations take place twice yearly, since the postgraduate course is condensed and takes place over the course of 18 months[1], whereas the undergraduate course is four years long. Great care is taken to ensure that students are allocated to different groups for each presentation, in order to

> ensure that they are not always part of an advantaged or disadvantaged team [with regard to high- and low-achieving students] and that they have opportunities to learn to work with students who vary in such variables as prior knowledge and interaction style.
>
> (van Aalst 2013: 292)

---

[1] From September 2014, the postgraduate course (Professional Masters in Education) in Marino Institute of Education will be extended to two years' duration.

In developing the approaches described here, the lecturers involved drew heavily on the literature to facilitate appropriate conditions for good group-based learning. As Rolheiser and Anderson (2004) point out, simply modelling cooperative approaches, while important, is not enough to ensure positive outcomes for students. If the relationships between grouping size, interaction type and learning tasks in groups are planned strategically then learning experiences will be more effective (Blatchford et al. 2003; Bąbka 2012), but research suggests that the relationships between these elements are often unplanned and there is, of course, more to group work than sitting students in groups and asking them to work together (Blatchford et al. 2003). The lecturers involved were mindful of the often quoted finding of Galton et al. (1980), who showed that within the majority of primary classrooms children sit in groups but rarely interact and work as groups. Instead, children, or indeed students, work individually or as a whole class. As advised by Ruys et al. (2010), students in Marino Institute of Education are now given both direct instruction in theories of cooperative-learning (lecture format) and personal experience of such learning approaches within their courses in Psychology and Sociology. The literature also shows that it is only under certain conditions that cooperative efforts may be expected to be more productive than competitive and individualistic efforts, and so in a similar approach to that of Rolheiser and Anderson (2004) in ITE, "the Johnsons's five basic elements" are used as guiding principles to structure cooperative learning for these students. These elements are (Johnson and Johnson, 1994):

- *Clearly perceived positive interdependence*: when individuals perceive that they are linked with group mates in such a way that they cannot succeed unless their group mates do (and vice versa) and/or that they must coordinate their efforts with the efforts of their group mates to complete a task.
- *Considerable promotive interaction*: characterised by individuals providing each other with efficient and effective help and assistance; exchanging needed resources, such as information and materials, and processing information more efficiently and effectively; providing each other with feedback in order to improve their subsequent performance; challenging each other's conclusions and reasoning in order to promote higher quality decision making and greater insight into the problems being considered; advocating the exertion of effort to achieve mutual goals; influencing each other's efforts to achieve the group's goals; acting in trusting and trustworthy ways; and being motivated to strive for mutual benefit.
- *Clearly perceived individual accountability and personal responsibility to achieve the group's goals:* when the performance of individuals is assessed, the results are given back to the individual and the group, and the individual is held responsible by group mates for contributing his or her fair share to the group's success. Group members must know they cannot 'hitchhike' on the work of others. When individual students fail to contribute and expect to benefit from the work of other group members, this is known as 'social loafing'.

- *Frequent use of the relevant interpersonal and small-group skills*: In order to coordinate efforts to achieve mutual goals, individuals must get to know and trust each other, communicate accurately and unambiguously, accept and support each other, and resolve conflict constructively.
- *Group processing:* Effective group work is influenced by whether or not groups reflect on (i.e., process) how well they are functioning.

With a view to encouraging positive interdependence and individual accountability, it is stressed to students of Psychology and Sociology in Marino Institute of Education that in summative grading, individuals are assessed both on their individual contributions to the group and on their understandings of wider group learning. It is necessary for students not only to engage with aspects of course content at an individual level, but also to engage in 'peer teaching' whereby resources and insights need to be shared in order for the group to achieve. In other words, the system of assessment encourages, indeed necessitates, considerable promotive interaction. Therefore, students tend to use a 'jigsaw approach' (Aronson and Patnoe 1997) whereby each group member becomes an 'expert' in one or more areas of course content, and then shares that expertise with their group colleagues, while also benefitting from learning about the areas of expertise of other group members. While it is hoped to award whole-group grades, students are aware that if necessary, grades may be individually differentiated for students within each group, again encouraging individual accountability and discouraging 'social loafing'. Group processing is encouraged through allocation of 10% of the grading criteria to a written submission outlining the benefits and challenges experienced and the individual contribution of each student, and students are given the space and the opportunity to explore both in theory and in practice the relevant interpersonal and small-group skills required to do well. In effect, the cooperative learning approaches developed here closely mirror the 'Fostering a Communities of Learning (FCL) Model' pioneered by Anne Brown and Joseph Campione (Brown 1992, 1994; Brown and Campione 1996) based on Vygotskian theory:

> The overall structure of the FCL model involves students (a) carrying out research in a particular area of inquiry where individuals or small groups specialize in a particular subtopic area, (b) sharing what they learn with other students in their research group and in other groups, and (c) preparing for and participating in a consequential event that requires students to combine their individual learning, so that all members in the class come to a deeper understanding of the central topic and the subtopics.
>
> (Bielaczyc, Kapur and Collins 2013: 234)

Data collection and analysis

The research reported here draws on the perspectives and experiences of the initial cohort of postgraduate students who were taught and assessed using the new collaborative approach in the academic years 2011–2012. The findings have been used to further develop

and enhance the approach with subsequent cohorts, as well as in guiding the design of Psychology and Sociology modules within a newly reconfigured B. Ed programme at undergraduate level. In total, the findings reported here represent the views of 59 student teachers, comprising 47 female and 12 male students. The data for the findings reported in this paper were obtained from the students following each of the group presentations. These presentations were audio-recorded in their entirety. Once the assessment phase and the questioning pertaining to it were completed, this was made clear to the students. It was then explained to them that a further informal query was to be put to them about the approach adopted in teaching and assessing these courses. The students were told that while they were under no obligation to respond to this query, and that it would have no bearing whatsoever on their assessment, any feedback to it would be welcomed with a view to potentially enhancing the preparation of future student teachers. The researchers then sought their views on the experience of the integrated teaching of the disciplines concerned, their preparation/ cooperative work for the presentations and their views on the assessment format. These responses were also audio-recorded. Subsequently, permission was sought and granted by all but one of the students involved for the anonymous use of the feedback data provided. For the purposes of analysis, the data obtained from the pertinent question was directly transcribed from the audio-recordings, and key themes in these transcripts were then identified.

Findings

Challenges associated with group-work

Student data confirmed the authors' views on the cooperative, integrated Psychology and Sociology modules as overwhelmingly positive: "*It was a really valuable way to do the course. We have in-depth understanding of it*". Nevertheless, they did report significant challenges regarding the logistics involved in working together on these projects in the midst of extremely busy courses, and heavy workloads. For example, while the location of school placement in the yearly calendar may have been helpful to students' learning conceptually, in terms of application of theoretical learning to the practice of teaching, and in turn drawing on practice to support understanding of theory, it presented significant challenges to students regarding dearth of opportunity to meet and work together. Students were on placement across the country, and so physical distance from each other ahead of their assessment was a problem identified by many respondents, in spite of attempts to use technology such as email and social media such as Facebook to compensate for gaps in face-to-face interaction:

> The obvious problem was that we've been away for six weeks. When I send an email around it's very hard for someone to read it and know exactly what you mean. Then last week we were able to get together – and even before we went away and they were the most productive sessions that we had.

> We got so much more work done in one face-to-face meeting than we did in six weeks [on placement].

Students also found it challenging to condense the sheer amount of learning they had done into a format applicable to a 30 minute presentation:

> The main challenge was that we all looked at so much research separately. Then we all came together and we were so much over time and we were trying to cut it down – to cut down on things that we felt were really important. So you ended up feeling you were skimming over all the rest you've done and not really getting into depth … Everyone felt their idea was really important.

> Vanity – it was hard to let your stuff go. We all did loads of research into our individual areas, but then bringing it together, having to cut it down – trying to cut out parts we felt were important. We just wanted to show off what we knew.

While experientially for students this may have been frustrating regarding the assessment and the opportunity to be graded highly, it is indicative of the breadth and depth of the learning that students felt they had achieved using this format, and for lecturers the difference noted in critical engagement, analysis and understanding, as well as the extent of reading and research undertaken when compared with the previous exam format was striking. Indeed, this comparison was noted by students, among the extensive benefits of group-work they identified.

Benefits of group-work

When asked to compare these approaches to previous experiences of exams, students were unanimous in their analysis of these approaches as contributing to wider, deeper and more meaningful learning:

> If the exam was on today I'd probably have gone and done a few hours of what we've learnt and then come in and reproduced it. But now, I actually know what everyone is talking about!

> I find that for an exam… you will learn it off for what you believe that person wants to read, what's to be given back to that person. You don't actually learn for your own knowledge and understanding of it. You learn to regurgitate the answer. That's very easily done and then it's just forgotten about… If you talk about it, you understand it.

> From my experience of exams, I've done psychology exams before, you kind of get everything into your head, and keep it in your head 'til you get to the exam, then write it out, then you've forgotten about it – It's only when you've explained it to someone else … It's definitely a better form of learning.

Students indicated, in particular, that they felt this learning was more meaningful because they had, and would in future, apply it to their practice as educators, as opposed to the well-documented 'disconnect' between theory and practice in traditionally structured ITE (Zeichner 2012):

> You remember it better. You apply it more as well because you were out on placement and you've seen it, whereas for an exam it's just theory.

> Some of this stuff in the lectures that you may not have understood – it was easier to understand because, say for example M's ability grouping – it was her own experience – so then you see how that actually works, so it was more practical. As such you can relate to it as well because you might have had the same thing going on in your class. So I got a better understanding. I did find it beneficial.

> Just thinking back to when we started – to my first teaching practice in particular. I probably would have implemented an almost behaviourist approach. I was there with my lesson plan and I was teaching these kids and asking them questions and expecting answers. … But looking at other theorists and how they have influenced how I will engage with children … Looking at my last teaching practice … I made sure when asking them questions to give them time for those thinking processes to occur.

Another important aim of the current work was to encourage integrated, interdisciplinary thinking (Conway et al. 2009; Ryan and O'Toole 2013), and this was very evident in the performance of students in their assessments. It was noticeable that students could think in an over-arching way and could refer seamlessly to a range of theories from both disciplines. The feedback they gave on their experiences also indicated cause for optimism in this sense:

> Rather than nature vs. nurture, you see it as nature and nurture – both Psychology and Sociology.

> And it's funny how they all link in as well – like how all the different areas link up together.

Equally the levels of critical engagement and reflection were noteworthy:

> I hope that I will always challenge my assumptions. I hope that I will always keep in mind that what I see isn't always what it appears to be – that I'll be prepared to challenge my prejudices.

Students also indicated that they could cover a much wider and more in-depth amount of material, in terms of reading and research, when the workload was divided between them, and they generally found it more enjoyable and engaging than individualistic or competitive approaches. They were very clear in their feedback that it was indeed the cooperative nature of this work that led directly to the benefits that they had identified,

and their experiences reinforced concepts of social knowledge (Nowak-Łojewska 2009), social pedagogy (Blatchford et al. 2003) and social learning (Vygotsky 1978). The efficacy of a dialogic approach to learning and its 'social pedagogic potential' (Blatchford et al. 2003) were well articulated by students, and in fact, they were very clear that lectures provided them with limited opportunities for learning, with most of their education taking place when they worked cooperatively independent of lecturers:

> When you go to the lecture you're taking notes, then you leave and you never discuss, you know – never talk about that at lunch! It was good to sit down and actually when you're discussing it in an informal setting you find you learn a lot more from your peers. Then you process it in simple language and relate it more to your own life.

> Discussing and having arguments – we were kind of fighting for topics – we had to listen to other people's viewpoints. If you didn't agree with something that was within your topic or someone else's point of view, you still had to present it. You'd be saying, 'this is a view I've come across, however, my opinion is…'. So you were getting three or four varied opinions on it. It really opened your mind. You were thinking broadly about it.

> It was about consolidating everything we've done. It was genuinely really beneficial to hear say six variations of situation in classes and make it really relevant.

> The team teaching was brilliant … if you were stuck on something or you didn't understand it, it was good to have the whole group discussion.

> You're constantly discussing it with each other – you have to dig out the differences.

> When we put all our opinions together we actually learnt from each other.

> If I had gone into those texts myself just as texts I would have found that incredibly confusing, very very confusing – too much going on, but with the other group members having dealt with those topics and presented things and that jig-saw method, you can relate to it, it makes those correlations a lot clearer.

Students also reinforced the literature findings regarding links between academic self-efficacy beliefs, self-confidence, and cooperative learning (Bandura 1994):

> When we were given [the assignment], we thought 'oh dear God' – we thought we'd have Educational Psychology, Sociology and then the macro and micro at the end. It was only when we came together, got into the group that it came together. You'd never have put it together [alone].

> It's kind of overwhelming when you're sitting down to deal with your own individual part, but when you come together, just talking about it, it totally relaxed me. Listening to a person explaining it to you, it is a lot easier.

Equally previous research findings regarding links between cooperative approaches and motivation (Bąbka 2012) were confirmed by these respondents:

> You don't want to let anyone in your group down so you feel you are motivated to work that little bit harder.

As such, notwithstanding logistical difficulties experienced by these students in their co-operative efforts, the experiences they reported are overwhelmingly positive, with benefits of cooperative learning including deeper and more meaningful learning than in individualistic or competitive approaches, greater application of theory to practice, stronger motivation and more enjoyment of learning on behalf of students, more integrated interdisciplinary thinking, improvements in academic self-efficacy beliefs and self-confidence, and stronger critical engagement with material.

Conclusions and recommendations

This work offers confirmation of extensive research findings documenting the benefits of cooperative learning, and extends them to emphasise its importance in Initial Teacher Education. It also echoes notes of caution provided by writers such as Bąbka (2012), Blatchford et al. (2003) and Johnson and Johnson (1994) in indicating that it is only under certain circumstances that cooperative learning will yield the positive outcomes that it promises. The perspectives and experiences of students of Psychology and Sociology in Marino Institute of Education, Dublin, Ireland yield the following conclusions and recommendations for teacher educators:

- The classic work of the Johnsons in identifying the five basic elements of 'good' approaches to cooperative learning remain relevant to ITE today, and provide good indicators of how to structure cooperative work to the benefit of students' learning.
- Weaving group-work around practical experience provides positive opportunities for students to develop integrated, interdisciplinary thinking, and facilitates theory-to-practice application.
- However, the structure of many ITE courses regarding such practical experience (off-site, away from campus) can lead to logistical difficulties for students in terms of coordinating their cooperative work, and teacher educators should structure their courses to support students in this regard. For example, the feedback of these students influenced the allocation of seminar as well as lecture time within the newly reconfigured undergraduate Psychology and Sociology courses which began in September 2013 in Marino Institute of Education. As such, time, space and support are now allocated to students to work on their group-work, and the findings of this research would indicate the necessity for similar adaptations to educational provision in ITE settings wishing to use cooperative methodologies.

- The findings reported here yield a strong recommendation that teacher educators should address the existing gap between rhetoric and reality in ITE, by modelling and using cooperative learning approaches for their benefits regarding the direct learning of student teachers and their benefits regarding student teachers' likelihood to implement these approaches themselves with children.

In short, it may be that cooperative learning provides teacher educators with the opportunity to bring to life the oft-quoted insight of Albert Einstein that "Education is not the learning of facts, but the training of the mind to think."

Acknowledgements

References

Anderson L.M., Blumenfeld P., Pintrich P.R., Clark C.M., Marx R.W. and Peterson P. (1995), Educational psychology for teachers: Reforming our courses, rethinking our roles. "Educational Psychologist", 30(3).

Aronson E. and Patnoe S. (1997), *The jigsaw classroom: Building cooperation in the classroom.* New York, Longman.

Bąbka J. (2012), *Cooperative Behaviour of Young People at an Early Stage of Adolescence in Task Situations: Comparative.* Zielona Góra, Poland, University of Zielona Góra.

Bandura A. (1994), *Self-efficacy.* New York, John Wiley & Sons, Inc.

Bielaczyc K., Kapur M. and Collins A. (2013), *Cultivating a Community of Learners in K-12 Classrooms.* In: C.E. Hmelo-Silver, C.A. Chinn, C. Chan and A.M. O'Donnell (eds.), *The International Handbook of Collaborative Learning.* London, Routledge.

Blatchford P., Kutnick P., Baines E. and Galton M. (2003), *Toward a social pedagogy of classroom group work.* "International Journal of Educational Research", 39(1).

Bronfenbrenner U. and Morris P.A. (1998), *The Bioecological Model of Human Development.* In: R. Lerner, D. Kuhn, R.S. Siegler, N. Eisenberg, and K.A. Renninger (eds.), *Handbook of child psychology.* New York, John Wiley & Sons.

Brown A.L. (1992), *Design experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings* . "The Journal of the Learning Sciences", 2(2).

Brown A.L. (1994), *The advancement of learning* . "Educational Researcher", 23(8).

Brown A.L. and Campione J. (1996), *Psychological theory and the design of innovative learning environments: On procedures, principals and systems.* In: L. Schauble and R. Glaser (eds.), *Innovations in Learning: New Environments for Education* . Mahwah, NJ, Lawrence Erlbaum Associates, Inc., Publishers.

Bruner J.S. (1996), *The culture of education* . Cambridge, Harvard University Press.

Collins A. (2006), *Cognitive apprenticeship*. In: K.R. Sawyer (ed.), *The Cambridge Handbook of the Learning Sciences*. Cambridge, Cambridge University Press.

Conway P.F., Murphy R., Rath A. and Hall K. (2009), *Learning to teach and its implications for the continuum of teacher education: A nine-country cross-national study*. Report Commissioned by the Teaching Council. University College Cork. Internet: http://www.teachingcouncil.ie/_fileupload/Publications/LearningToTeach-ConwayMurphyRathHall-2009_10344263.pdf, 2009.

Dillenbourg P. and Schneider D. (1995), *Collaborative learning and the Internet.* Published at http://tecfasun1.unige.ch/tecfa/tecfa-research/CMC/colla/iccai951.html. ICCAI 95.

Galton M., Simon B., Croll P., Jasman A. and Willcocks J. (1980), *Inside the primary classroom*. London, Routledge & Kegan Paul.

Greeno J.G., Collins A.M. and Resnick L.B. (1996), *Cognition and Learning*. In: D.C. Berliner and R.C. Calfee (eds.), *Handbook of Educational Psychology.* New York, Macmillan.

Hmelo-Silver C.E., Chinn C.A., Chan C., and O'Donnell A. (eds.) (2013), *The International Handbook of Collaborative Learning.* New York, Routledge.

Johnson D.W. and Johnson R.T. (1990), *Cooperative learning*. York, Blackwell Publishing Ltd.

Johnson D.W., Johnson R.T. and Smith K.A. (1991), *Active learning: Cooperation in the college classroom.* Edina, MN, Interaction Book Company.

Johnson D.W. and Johnson R.T. (1999), *Making cooperative learning work*. "Theory into Practice", 38(2).

Johnson R.T. and Johnson D.W. (1994), *An overview of cooperative learning*. In: J. Thousand, A. Villa and A. Nevin (eds.), *Creativity and Collaborative Learning.* Baltimore, Brookes Press.

Kourilsky M. and Wittrock M.C. (1992), *Generative teaching: An enhancement strategy for the learning of economics in cooperative groups*. "American Educational Research Journal", 29(4).

Lortie D.C. (1975/2000), *Schoolteacher: A sociological study*. Chicago, University of Chicago Press.

Neber H., Finsterwald M. and Urban N. (2001), *Cooperative learning with gifted and high-achieving students: A review and meta-analyses of 12 studies.* "High Ability Studies", 12(2).

Nowak-Łojewska A. (2009), *Students social knowledge – a neglected area of early school education.* In: A. Nowak-Łojewska, A. Olczak and A. Soroka-Fedorczuk (eds.), *Education of a young child: Reflections, problems, experiences.* Zielona Góra, Poland, University of Zielona Góra.

Rojas-Drummond S. and Mercer N. (2003), *Scaffolding the development of effective collaboration and learning.* "International Journal of Educational Research", 39(1).

Rolheiser C. and Anderson S. (2004), *Practices in Teacher Education and Cooperative Learning at the University of Toronto.* In: E.G. Cohen, C.M. Brody and M. Sapon-Shevin (eds.), *Teaching Cooperative Learning: The Challenge for Teacher Education*. Albany, New York, State University of New York Press.

Ruys I., Van Keer H., Aelterman A. (2010), *Collaborative learning in pre-service teacher education: an exploratory study on related conceptions, self-efficacy and implementation.* "Educational Studies", 36(5).

Ryan A. and O'Toole L. (2013), *Towards integrated learning: Linking psychology and sociology in initial teacher education*. Paper delivered to the Association for Teacher Education in Europe Spring Conference, Teacher of the 21st Century: Quality Education for Quality Teaching, Riga, Latvia, 10th–12th May, 2013.

Sawyer R.K. (ed.) (2006), *The Cambridge handbook of the learning sciences.* Cambridge, Cambridge University Press.

Sapon-Shevin M. (2004), *Introduction*. In: Cohen E.G., Brody C.M., and Sapon-Shevin M. (eds.), *Teaching Cooperative Learning: The Challenge for Teacher Education* . Albany, New York, State University of New York Press.

Slavin R.E. (1995), *Cooperative learning: Theory, research, and practice*. Vol. 2. Boston, Allyn and Bacon.

van Aalst J. (2013), *Assessment in Collaborative Learning*. In: C.E. Hmelo-Silver, C.A. Chinn, C. Chan, and A.M. O'Donnell (eds.), *The International Handbook of Collaborative Learning*. New York, Routledge.

Veenman S., Denessen E., van den Akker A. and van Der Rijt J. (2005), *Effects of a cooperative learning program on the elaborations of students during help seeking and help giving*. "American Educational Research Journal", 42(1).

Veenman S., Kenter B. and Post K. (2000), *Cooperative learning in Dutch primary classrooms*. "Educational Studies", 26(3).

Vygotsky L. (1962), *The Development of Scientific Concepts in Childhood.Cambridge*. MA, Harvard University Press.

Vygotsky L. (1978), *Mind in society* . Cambridge. MA, Harvard University Press.

Webb N.M. and Farivar S. (1999), *Developing productive group interaction in middle school mathematics*. Hillsdale, New Jersey, Lawrence Erlbaum Associates.

Zeichner K.M. (2012), *The turn once again toward practice-based teacher education*. "Journal of Teacher Education", 63(5).