Improving Professional Practice Through “Lesson Study”

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Abstract
At Lakes Grammar – An Anglican School in New South Wales, Australia, student data analysed from formative and summative assessments indicated a need for radical improvement. The most effective way to gain this was to change the professional culture of the teachers to one of “collaborative expertise”. John Hattie claims that the greatest influence on student progression in learning is having highly expert, inspired and passionate teachers and school leaders working together to maximise the effect of their teaching on all students in their care. With funding and consultancy from the Association of Independent Schools NSW (AISNSW), primary teachers planned and implemented several cycles of Lesson study. During ‘Lesson study’ cycles teachers: formulate long term goals for student learning; collaboratively work on ‘research lessons’; and revise the lesson in response to student learning. At Lakes Grammar this involved teachers in grade teams, led by a Stage Leader, meeting once per semester to collaboratively plan, design, implement, observe, evaluate and refine lessons for a unit of work on responding to and composing text based on quality literature. After each teacher taught the jointly planned lesson, the team reviewed the lesson, analysed the evidence of its impact on student learning and refined the lesson for the next teacher to implement. The lesson was improved by this process and the teachers learned from each other. The needs of students in each of the three classes were also considered in the planning. For example, refinements during the Lesson study cycles led to incorporation of higher-order thinking strategies that were aimed at students who were plateauing in the middle bands. Evidence of impact included work samples, student feedback and recorded teacher observations. Work samples were checked against state-wide standards and were mapped to the NSW Literacy Continuum K-10. Improved student engagement was evidenced by an observable depth of student focus, student-to-student interaction and concentration. The Lesson study cycles also resulted in increased rigour and challenge as teachers analysed work samples and observed students’ learning during the lessons. Lesson study is supported by a schoolwide change in professional culture at Lakes Grammar through effective teacher collaboration. Lakes Grammar is implementing these recommendations as teachers are opening their classrooms to one another through peer observations, peer coaching, meeting with professional learning partners and working in professional learning groups. External expertise via the AISNSW consultants ensured that best practice models were shared with the staff. All these practices are focused on students’ needs and improving learning outcomes.

Keywords: collaboration, learning, Lesson study, improvement.

1 Introduction
Lakes Grammar – An Anglican School is a Kindergarten to Year 12 independent school of around 900 students in New South Wales, Australia. The author is the Foundation Principal of the school, which opened in 2004. In 2016 the school began a school improvement process as part of a funded program titled “Schools Leading Learning” which was facilitated by the Association of Independent Schools New South Wales (AISNSW). The program implementation follows a cycle: conduct a school self-assessment by analyzing a wide range of student data; develop and implement a school improvement plan for an identified professional learning priority; monitor and review the impact of the actions taken; evidence-based evaluation of the school improvement plan. This paper focuses on an aspect of the professional learning that was chosen, i.e. Lesson study and its impact on professional practice and student learning in the Junior School (K-6). Student data obtained from formative and summative assessments indicated a need for radical improvement, particularly in literacy. The most effective way to gain this was to change the professional culture of the teachers to one of “collaborative expertise” [1]. John Hattie [1] claims that “the greatest influence on student progression in learning is having highly expert, inspired and passionate teachers and school leaders working together to maximise the effect of their teaching on all students in their care”. With funding and consultancy from the AISNSW,
Lesson study was chosen as one vehicle of teacher learning that had the potential to develop this “collaborative expertise” that would lead to improved student learning outcomes.

“Lesson Study is a Japanese model of teacher-led research in which a triad of teachers work together to target an identified area for development in their students’ learning. Using existing evidence, participants collaboratively research, plan, teach and observe a series of lessons, using ongoing discussion, reflection and expert input to track and refine their interventions.” [2]. The Lesson study model involves a small team of teachers working together in a systematic cycle of planning, teaching, observing, refining and reviewing specific lessons in order to focus on addressing an identified student learning need or pedagogical challenge and to improve their impact on student learning. The approach aims to provide a process for teachers to examine their practice in order to improve their impact on student learning [3].

The Lesson study approach to teacher professional learning has been adopted in other countries such as the UK, USA, Australia and Singapore. The initial impetus for adopting Lesson study outside Japan was that Japan gained good results on international tests such as TIMMS (Trends in International Mathematics and Science Study), Japanese schools use Lesson study, therefore Lesson study may help to achieve good results. Of course, it is too simplistic to hypothesise a direct causal relationship between Lesson study as a form of teacher research/learning and results on standardised assessments. There are many other factors that influence the learning outcomes for students, including systemic and cultural/societal attitudes to school education. However, there is some research evidence that Lesson study, as a form of teacher learning, has the potential to transform teachers’ classroom practice and build a usable knowledge base for teaching [4].

This paper is not a scientific study of the efficacy of Lesson study in lifting student performance. Rather, it is a case study of one school’s experiences in implementing Lesson study as a way of building “collaborative expertise” and improving teacher practice. The Primary teachers at Lakes Grammar have now undertaken Lesson study cycles in 2017, 2018 and 2019.

2 METHODOLOGY

“During ‘Lesson study’, teachers formulate long term goals for student learning; collaboratively work on ‘research lessons’; and revise the lessons...in response to student learning. These four activities – planning, observing, analysing student learning, and revising instruction - constitute a complete cycle of instructional inquiry” [4]. During 2017 Primary teachers planned and implemented several cycles of Lesson study focusing on aspects of literacy. The cycles involved teachers in “grade teams, led by a Stage Leader, meeting once per semester to collaboratively plan, design, implement, observe, evaluate and refine lessons for a unit of work on responding to and composing text based on quality literature” [5]. After each teacher taught the jointly planned lesson, the team reviewed the lesson, analysed the evidence of its impact on student learning and refined the lesson for the next teacher to implement. There are three classes in each grade so the grade teams consist of three teachers, led by a Stage Leader (in NSW Stage 2 for example, consists of Grades 3 and 4).

The Lesson study cycle followed is summarised in Table 1.

<table>
<thead>
<tr>
<th>Table 1. The Lesson study Cycle at Lakes Grammar</th>
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<tr>
<td><strong>Actions taken by team members</strong></td>
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<tr>
<td>1. Analysis of data to indicate the areas of greatest learning needs</td>
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<td>2. Professional learning provided by AISNSW consultant and joint teacher planning of a lesson</td>
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<td>3. Peer observation of the lesson followed by feedback to evaluate and refine the next lesson. Team discussion is focused on data collected and notes recorded. Lesson plan is revised and amended based on the group discussion [3]</td>
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<td>4. Self-reflection to identify new knowledge of effective teaching gained from the Lesson study cycle. The Lesson study team meets to discuss the cycle of observed lessons including differences, similarities, and changes. A group report is produced, outlining teacher learning and achievements in relation to identified student learning needs and the outcomes are shared with other teachers in the school at a K – 6 staff meeting [3]</td>
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Student data from a range of sources included: benchmarking student comprehension and writing achievement across the K-10 Literacy Continuum [6]; student work samples moderated against syllabus outcomes; and 2016 NAPLAN (National Assessment Program Literacy and Numeracy) data in comprehension and writing. Analysis of these data showed that a significant proportion of students were not reaching stage appropriate outcomes [5].

The AISNSW consultant, Dr Frances Whalan, then provided professional learning on the new English K-6 syllabus and, for the purposes of the Lesson study cycles, provided advice on effective pedagogy when teaching comprehension and writing.

Working with Dr Whalan, each grade team collaboratively planned a lesson that each teacher would teach. The specific needs of students in each class, as indicated by the data analysis, were factored into the planning. So, although there was a common focus for the Lesson study, each teacher's professional learning was related to their own students' reading and writing needs.

After the joint lesson was planned, one teacher taught the lesson while the other two teachers observed the learning that occurred. After the lesson, the teachers discussed their observations and refined the lesson for the next class. This led to refinements that included higher order thinking for students who were plateauing in the middle bands, requiring them to take responsibility for the quality of their writing through productive editing [5]. This pattern continued until all three teachers had taught the lesson to their respective classes.

Teachers then engaged in self-reflection to identify what they had learned from the Lesson study process. This could include what they had learned about their students, about how their students learn best, about best practice pedagogies in teaching aspects of literacy and about professional collaboration.

The Lesson study cycles took place within a broader framework of professional learning at Lakes Grammar. The whole school is on a school improvement pathway that is focused on improving student learning. A wide range of student data were analysed across the school, including Higher School Certificate results at Year 12, NAPLAN results at Years 3, 5, 7 and 9, Progressive Achievement Test (PAT) results, in-school assessment results, reading benchmarking, and moderating student work samples against syllabus outcomes and, in English, against the K-10 Literacy Continuum [6]. The team leading the school improvement process then set school goals for the coming year. The goals varied between the Junior School (K-6) and Senior School (7-12) according to the results of the data analysis. Professional learning strategies included: professional learning groups, professional learning partners, peer lesson observations, learning walks, individual goal setting based on school and personal professional needs, teacher coaches and Lesson study cycles. External expertise via the AISNSW consultants ensured that best practice models were shared with the staff. All these practices are focused on students' needs and improving learning outcomes. These strategies are in alignment with the recommendations for effective teacher collaboration of the NSW Centre for Education Statistics and Evaluation (CESE) [7].

In order for Lesson study cycles to occur, teachers must be released from class to observe one another. Initially, the funding from the AISNSW under the Schools Leading Learning program, enabled the school to release the grade teams from class to plan the lesson together and to do the observations of each other. After the funding ceased, the Principal allocated money in the school's budget to provide release time for teachers to continue collaborative planning, both through further Lesson study cycles and for other professional learning activities within the school. Budget constraints would require more creative ways to make time for teachers to collaborate in these ways, but it is providing this dedicated time that allows Lesson study to be effective.

3 RESULTS

Evidence of the impact of transferring professional learning into practice was collected during each Lesson study cycle through teacher observation and evaluation. Evidence of impact was seen in: the use of high impact teaching strategies; progress in student learning; improved student engagement in learning; and increased professional collaboration and openness to learning from colleagues.

3.1 High impact teaching strategies

The Lesson study cycle combined with expert input from the consultant on effective pedagogy and teacher understanding of the syllabus concepts, led to more effective teaching strategies. More
experienced and expert teachers and less experienced teachers worked together to design and implement the lesson based on the strategies shared by the consultant. The lesson was refined throughout the cycle, with the teaching strategies becoming more effective as the teachers reviewed its impact on student learning. As a Year 1 teacher stated:

> The opportunity to teach the same lesson and adapt and adjust it to the needs of the children was important. This opportunity enabled us as a stage to develop and perfect a lesson that was meaningful. The adjustments for each Lesson study cycle enable us to hone the teachable moments and assist children’s understanding of the topic [5].

During a Lesson study cycle in 2019, the author asked the Year 6 teachers how the jointly planned lesson would have been different if each had planned it individually; one teacher commented, “I probably would have had a more general learning intention rather than explicit” and another said, “You’d miss out on some good ideas…we helped refine each other’s ideas on how to teach it”. All these comments suggest that the collaboration between teachers was a significant factor in their professional growth during the Lesson study cycle.

### 3.2 Progress in student learning

Teachers collected work samples to monitor student achievement against the syllabus standards and the Literacy Continuum.

> The work samples were really revealing and really gave lots of data for forward teaching on this skill. (Year 3 teacher)

(Lesson study) was an excellent collaborative process. As teachers we were able to use all our ideas to plan a lesson, then analyse the behaviours and signs of learning to indicate whether or not the lesson was working. We were able to reflect on the lesson to work out what could be improved (Year 4 teacher) [5].

The work samples gave teachers information on student understanding of the concepts and any remaining gaps between the learning goal and their current achievement. Teacher discussion of this information led to improvements in the lesson as well as strategies the teachers could implement with their own classes after the Lesson study cycle.

The Lesson study process therefore increased the focus of teachers on student learning. Teachers’ observations were focused on the students’ learning rather than on the teacher. This heightens the teachers’ awareness that this focus on student learning is to be an integral part of their daily work, both within and outside the classroom.

> Our Lesson study discussions about evidence of learning has reminded me to build in a variety of informal assessment strategies, such as ‘exit tickets’, into my everyday lessons. In Maths, I have started to have students explain their thinking by recording themselves solving maths problems on Seesaw, thus enabling me to hear evidence of learning from more students than previously possible. (Year 6 teacher)

Catherine Lewis, a significant researcher of Lesson study, notes, “You’re really looking at student learning and saying: Is this working for students? And if it’s not working, how do we as teachers need to change it to make it work?” [8]

### 3.3 Improved student engagement in learning

There was an observable increase in the depth of student focus and concentration, as well as in peer interactions. This improved engagement resulted from the greater rigour as teachers adjusted the lesson according to student responses in the previous lessons.

> Students were engaged and learning. The students contributed their own ideas and suggestions to questioning. They shared their work with each other, they asked each other to provide detailed reasons for what they drew. The Lesson study process allowed us to implement, evaluate and refine the lesson, which meant that the students benefited from the improved and more streamline lesson. (Year 4 teacher) [5].
3.4 Increased professional collaboration

The Lesson study cycles have had a significant impact on teachers’ willingness to collaborate with colleagues on improving their practice with a view to improving their students’ learning. During the Year 6 Lesson study cycle in which the author participated in 2019, the teachers were asked about the benefits to them of the process. Comments included: “It improves our ability to work as a team”; “It gives you more faith in each other”; “It sets the culture of helping each other”; “It forces you to seek out other people”; “It helps people share”; “It’s about we’re all on a learning journey”; “It’s good for the kids to see that we’re learning together”. Dr Whalan, the AISNSW consultant, told the author that she had not seen to the same extent that teachers had so readily and willingly adapted to being in each other’s classrooms.

These comments confirm other findings about the benefits of Lesson study for teachers. “Lesson study can help build a community of practice in which teachers routinely share resources and ideas…. Ideally, the interpersonal bridges built during Lesson study enable collaboration well beyond the research lesson, increasing the coherence and consistency of the learning environment” [9]. This is reflected in the comments of a Year 6 teacher:

Lesson study has helped to foster a collaborative and supportive atmosphere at our school, where everyone is valued and where each person clearly has something to contribute. There is not a spirit of competitiveness or guardedness amongst our staff. Instead, going through this Lesson study process regularly engenders both a willingness to share resources and ideas, as well as a genuine desire to learn from each other.

The Year 6 Lesson study cycle focused on using Newman’s Analysis to help students understand and complete word problems in mathematics. One teacher said that the Lesson study process, particularly the joint planning phase, helped him to understand Newman's analysis: “It helps us get our head around what Newman’s Analysis is”. This increased knowledge of subject matter is another of the benefits of teachers jointly planning lessons [9].

Increased pedagogical knowledge is another of the benefits of Lesson study that goes beyond the immediate cycle. “Much of what teachers learn during Lesson study applies to areas beyond the particular lesson and subject matter” [9]. This may be particularly the case where less experienced teachers are in teams with more experienced or expert teachers.

Lesson study has also been shown to increase teachers’ motivation and sense of efficacy. One Year 6 teacher said that observing in other teachers’ classrooms “is a confidence booster, seeing students in other classrooms and how the teacher manages the behaviour”. “Many attempted instructional improvements fail to take hold because educators perceive them to be incompatible with their beliefs, values, or priorities. By clarifying and incorporating teachers’ individual beliefs, values, and priorities during the planning phase, Lesson study circumvents a common roadblock to improvement” [9]. This was evident in the Lesson study cycle in which the author participated. Each teacher was able to contribute their own ideas and their own students’ needs to the planning meeting. As the teachers discussed the ideas they refined and improved them together so that each teacher felt they had a part in the planning.

4 CONCLUSIONS

At Lakes Grammar – An Anglican School, Lesson study has had a major impact on professional practice. A Year 2 teacher wrote that, “the focus on student learning and looking for evidence of their learning has changed classroom practice and improved outcomes for students.” Primary teachers have engaged in several cycles of Lesson study throughout 2017-2019. The most obvious change has been in teacher collaboration. There has been an increase in teachers’ mutual trust and openness to observing one another’s classes: “a more cohesive staff who have a common focus and goal…improved relationships among the staff” (Year 2 teacher).

Teachers are no longer concerned that they are the object of the observation but rather that it is their students’ learning that is being observed. The focus of the “research lesson” on student learning has energised teachers to see this as their primary role – to plan for, to teach and to evaluate student learning, then to refine and adjust their teaching according to student need. A Year 1 teacher wrote that,

The Lesson study process has certainly helped identify the importance of collecting relevant data and how it can be used to support student learning and further develop our
teaching...Lesson study provided us with the opportunity to design effective data to be collected to show achievement or learning gaps. This has flowed into our current programs.

Teachers now do this collaboratively rather than as individuals looking at their own students, as noted by Lewis: “Over time, when teachers work in Lesson study, they go from saying ‘my students’ to saying ‘our students’,”[8].

Teachers have experienced professional growth through the collaborative development and review of lessons. A Year 1 teacher interviewed in April 2019 said, “I have grown in my planning and in my capacity to receive and give feedback to students and staff. I’ve also enjoyed the opportunity to be challenged by other staff using ideas and strategies that I wouldn’t normally use”. “Observing others teach has helped me develop my own teacher ‘craft’”(Year 2 teacher).

The teachers all valued the time given to collaboratively plan and reflect on each lesson delivered. If the reflection time was not given, the value of the whole exercise was limited:

My experience with this was when teachers have protected time to discuss what happened in the previous lessons the teaching skyrockets over the process. When there is no time to discuss the lessons taught the result is similar lessons or only the next teacher in the teaching sequence thinking about what will happen next. (Year 5 teacher)

This same teacher does not feel that the Lesson study process will have a long-term impact on his teaching. He feels that the benefits of Lesson study are within the cycle itself, in producing high quality lessons and focusing on the student learning that occurs in that cycle.

In terms of impact on student performance, it is difficult to ascertain from this case study if improvements have resulted from Lesson study alone. This form of professional learning has taken place within a whole school improvement framework. It is not possible to separate out the impacts of Lesson study from the impacts of more explicit teaching strategies or the mentoring program or a NAPLAN-specific program. Where the Lesson study “research lesson” focused on a particular concept, skill or teaching strategy, pre-and-post testing would demonstrate whether it had an impact on student learning. However, this is different from impact on performance in standardised testing.

Given the time-intensive nature of Lesson study, and therefore the cost to the school, it is important to evaluate its long-term impacts on teachers’ professional growth, the school’s collaborative professional culture and on student learning. From this single-school case study of the effects of Lesson study, it is clear that many teachers have experienced professional growth and that the collaborative culture of the staff has grown enormously. The extent to which Lesson study has had an impact on students’ performance in standardised tests, such as NAPLAN is uncertain at this stage.

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