

How can introducing subject specific Welsh questioning across the curriculum facilitate learner use in year 5 and 6?

Please add your targets from the previous assignment using the table below.

	Target	What I have done in this assignment.
Target 1	Investigate the use of 'topic sentences' at the start of paragraphs to develop a more concise style - you do not need to keep telling the reader what the section is about, rather signal it clearly with a topic sentence.	Used topic sentences to help my writing become more concise.
Target 2	Read a wider range of texts, including a range of perspectives	Tried to incorporate a wide range of perspectives in my writing to help support my findings.
Target 3	Ensure sentence structure is consistently accurate	Went through to check sentence structure post finishing writing the essay.

Word count: 5204

Aim, focus and purpose of research

This research is interested in how subject specific Welsh questioning can be used across the curriculum to facilitate learner use in year 5 and 6? The Welsh government set out an action plan to set out a direction for the development of Welsh language education over the years, 2017 - 2021 in line with developing a million Welsh speakers by 2050 (Welsh Government, 2017). Therefore, primary schools all over Wales are aiming to implement Welsh as a cross- curricular aspect to learning to support other lessons rather than just one off lessons. In many primary schools this is important to develop across the curriculum. In school 1, the teacher suggests the learners have higher attaining levels of Welsh vocabulary and the majority seem to enjoy Welsh so it should be easier to implement within a religious education lesson.

Research context

However, they do not have confidence in their ability to use Welsh. This was discussed between the researchers leading to this piece of research. It should be really beneficial to establish that if teachers begin to introduce Welsh questioning through multiple contexts, will it help learners to use Welsh questioning more often? The final research question that was produced is 'How can introducing subject specific Welsh questioning across the curriculum facilitate learner use in year 5 and 6?' For both classes, this means developing questions and responses that are appropriate to the lesson and observing the use of those questions, focussing on a range of attaining learners (higher, middle and lower).

Literature review

This was looked into further by completing a literature review on the concept of using Welsh as a cross curricular concept to support learning. The Curriculum Cymreig focuses on the characteristics that are specific to Wales (Andrews and Lewis, 2000). The intention of The Curriculum Cymreig is to advocate "pupils should be given opportunities, where appropriate, to develop and apply knowledge and understanding of the cultural, economic, environmental, historical and linguistic characteristics of Wales" (ACCAC, 2003) The opinions of the classes towards Welsh are not overly positive, which is reflected in the research completed by Andrews and Lewis (2000). They completed interviews with learners where they found a variety of different attitudes towards the Welsh language. They found that "pupils in one school felt that those who could speak Welsh were more Welsh because they '*carry on*

traditions more', though generally others felt that *'you sort of grow up with all the culture- Welsh language doesn't affect you being Welsh'*. They found that there was an overwhelming feeling that *"the culture is what makes you Welsh"*. A really interesting point from this research was that on the whole English medium schools spoke more Welsh with learners, maybe due to the importance of learning the language. This information improves our understanding of how Wales considers the Welsh language within primary schools and where the Welsh government wants the language to go.

Primary schools need to understand how to use the Welsh language to ensure positive and successful learning experiences. The research conducted by Lovell (2019) provides a more in depth understanding of how the practice of the Welsh language within the class is being used. Lovell (2019) made some interesting points that as the Welsh language is restricted to a handful of hours a fortnight could mean a lack of meaningful contact with Welsh in the class. This lack of bilingual ethos seems to make it difficult to deliver effective Welsh and Welsh learning. This suggests there has been a gap between the Welsh Government policies and what is happening in practice. This gives a good gap for this research to gain more information on how we can successfully implement Welsh in a variety of different situations. However, Lovell (2019) looked at secondary schools where the learning is very distinct and separate so within primary schools the situations are considered to be slightly more effective for the Welsh language but there was no research supporting this.

This review has looked at the policy behind learning Welsh and how it is considered within the classroom. The review will move onto what are important considerations when developing cross-curricular Welsh within your class. Williams (1998) suggest that teachers need to ensure that a language needs to be learnt through both medium and message – orientated activities. There needs to be a purpose to a lesson rather than to just teach a language, which will be supported in this research, as it is not just about the children learning the Welsh language; it is about them describing their opinions of the Ten Commandments using Welsh rather than English. Williams' (1998) research is over 20 years old but the messages are still consistent with how Welsh is being implemented and the factors that need to be considered when introducing this topic.

The new curriculum, supported by Donaldson's (2015) successful futures coming into Welsh education by 2021, has four purposes that mean all learners will be:

1. Ambitious, capable learners
2. Enterprising, creative contributors
3. Healthy, confident individuals
4. Ethical, informed citizens (pp. 29 – 30).

This research of using Welsh across the curriculum links in well with these four purposes, especially with ethical, informed citizens. As Donaldson (2015) aims that the learners are to be knowledgeable about their culture, community, society and the world. Therefore, this research is really important to help impact the way that the Welsh culture is conveyed within primary schools. There are numerous acts and policies that help schools with continuing Welsh provision; such as Cymraeg 2050, The Welsh Language Standards Regulations 2018, and Welsh in Education Strategic Plan. Welsh in Education: Action Plan 2017 – 21 (Welsh Government, 2017) have five objectives and key actions that need to be delivered by 2021. These include inspiring learners to learn and use the Welsh language; opportunities to use the Welsh language; and giving the learners equal access to Welsh. The five objectives and key actions support the aims of this research; to see if the use of Welsh questioning across the curriculum can support learner use in years 5 and 6.

There are very few specific research papers looking into the practice of using Welsh across the curriculum to support learning. Therefore, this is a good area to research as gaining more information from learners and their perceptions of using Welsh in a different contexts helps teachers and policy makers understand how best to implement Welsh in lessons. Currently, a large majority of information is from the Welsh Government guidelines but there is limited cause and effect research. This could be due to the nature of primary schools and the vast amount of factors that could be causing the effect, which needs to be kept in mind when this research is on-going.

These readings have supported the research question and allowed refinement to “How can introducing subject specific Welsh questioning across the curriculum facilitate learner use in year 5 and 6?”

Lesson study design

The predominant methodology used is lesson study research, which is a form of action research. Lesson study research methodology is a classroom inquiry model,

requiring teachers to work together to plan, teach, observe, analyse and refine lessons to improve practice (Pang & Ling, 2012; Stols and Ono, 2016) In addition, lesson study aims improve pupil progress. In this research, this is what the pair of researchers will do, by planning together, teaching, observing, analysing and refining the lessons. Within the lesson study there will be three specified case study pupils, chosen by the class teachers of higher, middle and lower attaining learners, who will be observed specifically in the lesson and then interviewed post lesson. Cordingley et al. (2004) suggest that lesson study blends professional learning that most improves learning and teaching. Using a lesson study has many benefits including; continuous professional learning, using real pupils and collaborative enquiry. Dudley et al. (2011) suggests that lesson studies can allow teachers to follow pupil learning more closely and find gaps that they did not realise were there.

However, one major issue with using a lesson study is the amount of time a lesson study takes, including the planning, interviewing and the post observation discussion (Ogegbo et al., 2019). Chokshi and Fernandez (2004) suggest that lesson study may be a vehicle for continuous professional development but there is limited expert input to ensure that there is meaningful change in practice. Mon et al. (2016) suggest another limitation of lesson studies is the perception by teachers of being observed as they expressed tension and uncomfortable feelings when they are being observed. It is very important to consider that the teaching is not the aspect that is getting observed, it is the concept being researched and the learning done in the lesson.

The methods of data collection completed in the lesson study that will be used will be non – participant observation, semi-structured focus group interview and reflection.

Non - participant observation will be used to collect data from the lesson, particularly to collect information about people, processes and cultures through the use of qualitative research (Kawulich, 2005). Marshall and Rossman (1989, p. 79) define observation as “the systematic description of events, behaviours and artefacts in the social setting chosen for study”. Non - participant observation is where the researcher watches the participants in the study, without taking an active role within the situation that is being researched (Scott and Marshall, 2009). Observation methods are suggested to gain a holistic understanding that is as accurate as possible (Dewalt et al., 2002). An advantage of this data collection is that it gives a

rich and detailed description of the situation describing behaviours, intentions, situations and events as detailed by Demunck and Sobo (1998). However, one major disadvantage that needs to be considered before completing the research is that different researchers can gain different understanding of what they observe so there may be different interpretations of what may happen in the research (Dewalt et al., 2002). Therefore, having numerous observers or specific guidelines as to the purpose of the observation may reduce this issue.

In this research semi-structured interviews will be used. The use of semi-structured interviews is very beneficial when completing small-scale research as suggested by Drever (2003). The interview will have a few pre – determined questions that will ensure the interview will not sway off the purpose of the questions but it also has flexibility to follow a line of enquiry if deemed appropriate. However, when interviewing children there are a few considerations that need to be thought about such as being easily distracted; not always clear in their responses; limited attention span; interview may be seen as a test. Interviewing is the one of the data collection methods as it provides a rich data source and gaining an insight into the language used by the participants (Newton, 2010). The purpose of these interviews will be to provide an insight and to produce themes of consideration (Newton, 2010). However, Kajornboon (2005) suggest that the interviewers need to be properly trained in order to gain the best responses from the learners.

Once the first lesson study both researchers will reflect on how it went. This will be done following the outline and questions completed previously and done through several methods; orally and in writing shown in Appendix 2 and 3. When reflecting orally suggestions for improvement for the next lesson that will be undertaken. Reflecting can help focus our thoughts and develop our ideas through organising our thinking. Reflecting will involve three processes; experiencing, thinking and learning from the experience. Within this research the Gibbs' (1988) reflection model will be followed and it has six distinctive stages. These include:

1. Experience
2. Feelings
3. Evaluation
4. Analysis
5. Conclusion
6. Action plan

This will help the researchers contribute to how the next lesson will be progressed.

The observational notes are considered mainly as a quantitative form of data collection, as it is the number of times a child has done something that has been considered important, giving us numerical data. However, there is space to complete extra observations, which is qualitative data as it allows for a perception of the researcher of the lesson study. There are strengths and limitations to both types of data collection that needs to be considered whilst reading the results and will be discussed in the discussion later in the essay.

The reflections were captured using written notes discussed post lesson and interview between the two researchers. The reflection proforma (see Appendix 2 and 3) will be followed post lesson to ensure all aspects are covered within the discussion.

The focus group of learners were chosen as we wanted a sample of a higher, middle and lower attaining learners that could give a general overview of how a variety of different learners may perceive and receive this type of lesson. The sample size includes two classes of 55 in total with a focus on 6 learners. The focus group will allow the research to gain qualitative data, as the responses are the perceptions from the learners, allowing for quotes and opinions to be collated in the discussion.

Ethical considerations

There are ethical considerations with doing research in a classroom, which are confidentiality; anonymity; risks to participants, researcher and university. BERA (2018, p. 21) suggest that the “confidential and anonymous treatment of participants’ data is considered the norm for the conduct of research”. Therefore, the participants will be referred to as a number within the research. The data will be kept securely on a password-protected laptop to prevent others from seeing the data. The risks associated with this research and how these risks will be mitigated was established in the ethics form associated with the research, which can be found [here](#).

Lesson study 1 and 2 analysis

School 1 – Higher; child 1

Middle; child 2

Lower; child 3

School 2 – Higher; child 4

Middle; child 5

Lower; child 6

Above, explains the different ability learners and how they will be referred to in the rest of the essay.

In school 1, the lesson objective was to discuss the Ten Commandments in relation to the story of Moses. The learners aimed to complete a diamond nine of the ten commandments, then discuss their thoughts and reasons using a Welsh question and answer: 'Dw i'n meddwl....'. The learners discovered a range of different vocabulary in relation to Welsh. As shown in the observation schedule (Appendix 1), child 1 and 2 were suggested to be really engaged in trying to work the meaning of the vocabulary out whilst practising their pronunciation as seen in introduction - extra observations. This seems to be consistent throughout the lesson; both child 1 and 2 were engaged in the learning, answering questions and responding to both the teacher and other learners. However, child 3 did not seem interested in answering or reading questions, especially in the plenary as shown in Appendix 1. This seems to be consistent when we spoke to child 1 and 2, as they seemed to be engaged within the lesson and enjoy using the Welsh within a different lesson;

Child 1: *"It was good because you could learn, because when we do normal Welsh lessons you learn how to tell the time ... and like different things and maybe bigger sentences. But in RE or any other sessions you can learn different words like gorchymyn."*

Child 2: *"I liked it in RE because we got to learn different words and kind of extend what we normally say."*

However, child 3's reaction in interview did not seem consistent with what was observed in the lesson;

Child 3: *"I enjoyed it because you don't always have to use Welsh in Welsh like you don't always have to use it in Welsh lessons you could use it in like any other lesson."*

The reaction may be inconsistent with the observations because of the reactions of the other learners when they explained that they really enjoyed using the Welsh in a different lesson. This could be due to the Hawthorne effect that was first suggested by Landsberger (1958) and is described as the awareness of being studied and the impact on a person's behaviour. The Hawthorne Effect is one of the biggest issue in participant observation as the learners may have taken part more than normal or less than normal due to being observed by others. However, as the researcher has been a continuous presence in the classroom for the past few weeks, suggests that the reactions could be consistent with their normal reactions. However, the biggest issue seen in this environment was the interview reaction of child 3 as they were not consistent with their behaviour within the lesson. Oswald et al. (2014) suggests that there are 6 stages that create a reduced likelihood of the Hawthorne Effect occurring. Within this situation, the most important stage to consider would be stage 2 – create a non-threatening perception. This may have been done by including a learner that or a person that would have made them feel more comfortable rather than others within the class and someone from outside the school. One of the questions was how the learners would change the lesson and one response that seemed to be consistent with all three learners:

“I would ask the different questions, instead of what do you think is the most important like what do you think is the least important and the split one.”

This allowed us to consider the changes we would implement in the second lesson study, to engage the learners and allow them many opportunities to discuss their work using Welsh.

In school 2, the lesson objective was to get them to discuss Welsh artwork, how it made them feel and what they can like or dislike. The learners aimed to ask a variety of questions and respond to those questions about different paintings to a variety of different learners. At the beginning the teacher compiled a range of vocabulary in relation to the artwork to increase the learners' range before they began their discussions. As show in Appendix 1, child 4 engaged in all aspects of the lesson, which we can see by the amount they initiate conversations throughout the lesson, responding to peers and the teacher in Welsh. There was a vast difference between the child 4 and both child 5 and 6 in the main body of the lesson. Child 4 was able to support other learners in their pronunciation, confident in their ability to speak and

they added extra sentences in the conversations such as '*sut wyt ti?*' Whereas, child 5 and 6 seemed quite disengaged in the conversational aspect of the lesson. This could have been due to those learners starting with the artwork part of the lesson and not being able to finish it so deemed finishing that more important than taking part in the conversation. It also could have been due to their previous lower attainments in Welsh, so their confidence in speaking the language may have been reduced. This seems to be reflected in child 5's opinions towards Welsh, as during the interview they said,

"because its just words, it just confuses me."

And child 6 said,

"I'm kinda both, I don't like it because some of the words they I just forget and then I don't know what I'm saying and then I like it because like its like a chance to, its like an opportunity to try new things and I'm not really that type of person so I feel like go for it ."

This is the total opposite to child 4 who said,

"Dw i'n dwlu ar siarad Cymraeg yn fawr iawn, mae'n well da fi siarad Cymraeg nag siarad Saesneg."

They were so engaged in Welsh and their improvements in Welsh, they wanted to reply to the question in Welsh to show how much they can do and how high their confidence is. It seemed to be quite consistent with how the learners felt about Welsh and how much they took part in the lesson, especially in the conversational aspect. Things that could have been improved with the lesson that were suggested by the learners were that they wanted a writing aspect to their conversation so the researchers did not find the correct balance between writing and speaking in the lesson. That definitely needs to be considered if there was to be another lesson study. On reflection of our lesson study the researchers suggested that child 6 disengaged with the speaking aspect of the lesson about the art pictures, especially the learners who had a negative opinion on Welsh so including different games into the questioning may have been successful to remove the negative feelings towards Welsh.

The learners had very similar opinions on speaking Welsh, on the whole they enjoyed it but child 4 did not enjoy it and said

"I'd rather finish off my work."

This comment implies that they consider that the other work is more important to them and that Welsh does not have the same level of importance. Child 6 suggests they enjoy Welsh but they do find it hard with some of the understanding and the words. These opinions seemed to be reflected in the amount the learners participated in the lesson, so ensuring learners have a positive opinion on Welsh is important for the learners participation in the lesson.

These differences of opinions could be due to the different types of learners and the different types of schools. School 1 has a free school meal (FSM) of 0.8% and is a rural school, which has a pupil to teacher ratio of 21.8. School 2 has a FSM of 33.9% and is an urban school, which has a pupil to teacher ratio of 22.8 (My Local School, 2019). School 2 is in a socio-economically disadvantaged area and Thiele et al. (2017) suggests that learners who come from a household with a lower socio-economic status, underachievement might be due to a number of challenging factors including a negative view on educational factors. Therefore, this may another factor as to why the learners in school 2 may have negative views on Welsh, as they do not deem it important within their lives.

On the whole, the majority of the learners enjoyed using Welsh within a different lesson, as there seemed to be more of a purpose to the learning rather than just using Welsh for Welsh sake.

Discussion

In this research the main finding was that the majority of the learners seemed to enjoy using Welsh across the curriculum, this understanding was established using the information they gave us during the interviews. However, the observation schedule did not seem to correlate with child 3 and child 6's opinions, as they very rarely initiated Welsh conversation in the any part of the lesson, especially in comparison with child 1 and child 4. This may have been due to the limited resource support in both lessons so the learners who struggled with the Welsh may not have felt best supported as seen in Appendix 6 and 7. However, child 5 had a very negative response towards Welsh, which seemed to lead to them not taking a large part in the main body activity. This could have been due to the type of home they are from and the negative opinions the parents or guardians may have about Welsh and / or school, as explained previously in the research.

The class in school 1, all 3 children said they really enjoyed using Welsh in the lesson so this could mean that in the future the teacher could bring in small part of Welsh questioning in different lessons to support their learning and their Welsh

language development. However, the resources need to be considered for the lower learners so that they are more supported in the conversational aspect of the lesson. The teacher needs to consider the type of learners in the class as within school 2, the responses and the actual use of the Welsh was very different to school 1. This could have been due to numerous reasons, such as negative parental opinions of school passing onto their children, negative experiences in Welsh, not seeing the fun in Welsh and many others.

However, the results need to be considered with slight caution, as there were issues with the ways in which the results were collected. It is hard to establish cause and effect when there was no control lesson to establish a baseline for each learner. However, this was not possible in the time limit so this needs to be considered in the reading of the results. In addition to that, the lesson was adapted on the basis of school 1 but changing the lesson for a completely different class and school seemed counter intuitive as then it is hard to compare the lesson for the classes when what was implemented was different for each class. However, this does not mean that the research was unnecessary as there are lots of aspects that can be progress the research within the use of Welsh across different areas of the curriculum. The strengths of this research were getting the opinions of the learners on how the lesson went and what they think would help increase engagement with Welsh itself, especially as they were aged between 9 and 11 years old. This allowed us to gain a really in depth perspective of their experiences as seen in Appendix 4 and 5. Observing the learners in the lesson also allowed the researchers to gain an understanding of how much the learners actually took part in the lesson as this is hard to do with all learners in each lesson when teaching.

Conclusion

It is difficult to suggest whether the method of observation can be considered reliable and valid. Ofsted (2019) completed a review on lesson studies and whether they were reliable or valid. It is suggested that the inspectors could make valid assessments when they used the observation model. Therefore, as this lesson study used an observation schedule it could be suggested that the results were valid but as the researchers were not trained in completing the observation it could be suggested that this may have reduced the validity. Validity is suggested to be a very important aspect in educational research and it is “a matter of assessing the right thing, in the right way, to provide accurate and useful assessment results” (Newton, 2017, p.16).

Observations in primary school, Ofsted (2019) suggest they have a moderate level of reliability. Meaning that if in the same situation, with a different researcher there is a good possibility that different conclusions would have been formed. Therefore, in this research different researchers collected the observations for each lesson, which could have affected the results. To combat this issue would have been to have a third researcher who did both observations on the lesson to keep continuity. Reliability is the extent to which the data collection methods are consistent, this is most difficult to achieve when working with qualitative data (Sweet et al., 2010).

This data cannot be generalised to other schools as the results need to apply to other study settings or samples suggested by Kukull and Ganguli (2012). Aspects of the study such as design, data collection and statistical analysis leads to improving internal validity and this internal validity allows the researcher to make a judgement as to whether the results can be generalised (Kukull and Ganguli, 2012). Using this information, it would suggest that the results of this lesson study would be unable to generalise due to the massive differences between learners and schools. In addition to this, the data collection is qualitative in nature suggesting that the data collected would be subjective so more needs to be done in future research to ensure that the subjective nature of the research is reduced. This may then allow the results to be generalised to other populations.

In future research, a way in which the lesson study could have been improved may have been to incorporate a pilot of research methods prior to completing the research. A pilot refers to conducting preliminary research prior to the study allowing the researchers to gain informed reflection and a need for any modification of the research design (Hassan et al., 2006). A pilot study was not completed in this research due to time constraints but it is something that helps contribute to the groundwork in a research project (Hassan et al., 2006).

In my next school experience I will try to implement Welsh questions and responses to support their learning in different lessons. This should hopefully reduce the stigma towards Welsh and introduce mini games to support vocabulary improvements. This will help me move forward as it will continually help me to improve my Welsh and it will ensure that I am continually developing my own Welsh to be able to support their learning within Welsh.

If I did this lesson again I would have given more obvious sentence structures especially for support for the lower learners. I would also have liked to incorporate a couple of extra questions for the learners who reached the end of the question and answer, to push them further. This would have had a similar structure as the original question but included a question about another aspect of the lesson.

Recommendations

In light of this research the recommendations that would be suggested using researcher reflection, learner interviews and the observation schedule are that if Welsh is to be used to support across curriculum learning there needs to be

1. A writing aspect to support their speaking
2. There needs to be a speaking opportunity to support pronunciation and confidence
3. A vocabulary list should be produced either for the learners or with the learners to gain ownership of the Welsh
4. A range of questions to progress the higher attaining learners especially.

These findings can inform further research by trying to engage lower attaining learners and ensuring they take part in all aspects of the lesson. In addition, trying to help learners enjoy Welsh especially when considering school 2 and the type of community that school is based in

Moving on in lessons, it is important to use Welsh continually throughout a variety of lessons to try and reduce their negative feelings towards Welsh and to improve their range of Welsh vocabulary.

If this lesson study research was to be completed again I would like to complete the research with one class, at least twice because comparing different classes is difficult to gain good results, as the classes are both so different. I would like to complete the research, alter it for the next lesson with the same class and then try again. Then, I would implement my findings in a slightly different class comparing the results found. Sharing the good practice I would think the major suggestion from this research would be to gain an understanding of your class and their opinions on Welsh and how they want to make it better for themselves. It is suggested that learners who are in charge of their own learning and how they want to improve ensures engagement in the lessons (Conley and French, 2014).

Reference list

- ACCAC (2003). *Developing the Curriculum Cymreig*. Available at: <http://www.wasacre.org.uk/publications/wag/E-developingthecurriculumcymreig.pdf> (Accessed: 20 February 2020).
- Andrews, R., and Lewis, G. (2000). "Citizenship education in Wales: community, culture and the Curriculum Cymreig", *Education- line*, pp. 7-10. <http://www.leeds.ac.uk/educol/documents/00001571.htm>
- BERA. (2018). *Ethical guidelines for educational research*. 4th edn. London: British educational research association. Principles, Policy and Practice, CARFAX, Oxfordshire, Vol. 5, No. 1, pp. 7-74.
- Choski, S., and Fernandez, C. (2004). "Challenges to Importing Japanese Lesson Study: concerns, misconceptions and nuances", *Phi Delta Kappan Magazine*, 85(7), pp. 520 – 525.
- Cordingley, P., Bell, M., Rundell, B., Evans, D., and Curtis, A. (2004). "How do collaborative and sustained CPD and sustained but not collaborative CPD affect teaching and learning?", London: EPPI-Centre, Institute of Education.
- Conley, D, T., and French, E, M. (2014). "Student Ownership of Learning as a Key component of college readiness", *American Behavioural Scientist*, 58 (8) pp. 1018 – 1034. DOI: 10.1177/0002764213515232
- deMunck, Victor C. & Sobo, Elisa J. (1998). *Using methods in the field: a practical introduction and casebook*. Walnut Creek, CA: AltaMira Press.
- Dewalt, K, M., Dewalt, B, R., and Dewalt, B, R. (2002). *Participant observation: A guide for fieldworkers*. Walnut Creek, California ; Oxford : AltaMira Press.
- Donaldson, G. (2015). "Successful futures: Independent review of curriculum and assessment arrangements in Wales." ISBN 978 1 4734 3043 3.
- Drever, E. (2003). *Using Semi- structured interviews in small – scale research. A teacher's guide*. Scottish centre for research in education. Rev. ed. Edinburgh : SCRE.
- Dudley, P. (2011). *Lesson Study: a handbook*. Available at: https://lessonstudy.co.uk/wp-content/uploads/2012/03/Lesson_Study_Handbook_-_011011-1.pdf (Accessed 17 February 2020).
- Gibbs, G. (1988). *Learning by Doing: A Guide to a Teaching And Learning Methods*. Oxford, Polytechnic: Further Educational Unit.
- Hassan, Z, A., Schattner, P., and Mazza, D. (2006). "Doing a pilot study: Why is it essential?", *Malays Farm Physician*, 1 (2-3), pp. 70 – 73.
- Kajornboon, A, B. (2005). *Using interviews as research instruments*. Available at: https://pdfs.semanticscholar.org/57e1/87565ff9c19fb9d7673b964cd77f485bcab0.pdf?_ga=2.130736143.1623671553.1582114505-840970680.1582114505 (Accessed 20 February 2020).

Kawulich, B. B. (2005). "Participant observation as a data collection method", *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 6(2), Art. 43, <http://nbn-resolving.de/urn:nbn:de:0114-fqs0502430>.

Ketut, S., Wayan, S. I., and Made, P. N. (2019). The effect of lesson study on science teachers' pedagogical content knowledge and self efficacy. *International Journal on New Trends in Education & their Implications*. 10 (4), pp. 1-11.

Kukill, W. A., and Ganguli, M. (2012). "Generalizability. The trees, the forest, and the low-hanging fruit", *Neurology*, 78 (23), pp. 1886 – 1891.

Landsberger, H. A. (1958) *Hawthorne revisited. Management and the worker: its critics, and developments in human relations in industry*. Cornell University : Ithaca, N.Y.

Lovell, A (2019). *Wales wants to make the Welsh language part of every lesson under the new curriculum*. Available at: <https://theconversation.com/wales-wants-to-make-the-welsh-language-part-of-every-lesson-under-new-curriculum-120312> (Accessed 20 February 2020).

Marshall, C., & Rossman, G. B. (1989). *Designing Qualitative Research*. Newbury Park, CA: Sage.

Mon, C. C., Dali, M. H., and Sam, L. C. (2016) "Implementation of lesson study as an innovative professional development model among malaysian school teachers", *Malaysian journal of learning and instruction*, 13 (1), pp. 83 – 111.

My local school (2019). Available at: <http://mylocalschool.gov.wales/School/6732181?lang=en> (Accessed on 18 February 2020).

Newton, N. (2010). *The use of semi-structured interviews in qualitative research: strengths and weaknesses*. Available at: http://www.academia.edu/1561689/The_use_of_semi-structured_interviews_in_qualitative_research_strengths_and_weaknesses (Accessed on 20 February 2020).

Newton, P. (2017). *An approach to understanding validation arguments*. Available on www.gov.uk/government/publications/an-approach-to-understanding-validation-arguments (Accessed on 19th February 2020).

Ofsted (2019). *How valid and reliable is the use of lesson observation in supporting judgements on the quality of education?* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/811808/Inspecting_education_quality_Lesson_observation_report.pdf (Accessed on 20 February 2020).

Ogegbo, A. A., Gaigher, E., and Salagaram, T. (2019). "Benefits and challenges of lesson study: A case of teaching Physical Sciences in South Africa", *South African Journal of Education*, 39 (1), pp. 1 – 10.

Oswald, D., Sherratt, F., and Smith, S. (2014). "Handling the Hawthorne effect: The challenges surrounding a participant observer", *Review of Social studies*, 1 (1), pp. 54 - 73.

Pang, M, F., and Ling, L, M. (2012). "Learning study: helping teachers to use theory, develop professionally, and produce new knowledge to be shared", *Instructional Science*, 40, pp. 589 – 606.

Scott, J., and Marshall, G. (2009). *A Dictionary of Sociology*. Oxford University Press. ISBN: 9780191726842.

Stols, G. and Ono, Y. (2016). *Lesson study: An implementation manual*. Available at https://school-maths.com/documents/Lesson%20Study%20Manual_Eng_Stols_Ono_25Dec2016.pdf (Accessed 19 February 2020).

Sweet, R, M., Hananel, D., and Lawrenz, F. (2010). "A unified approach to validation, reliability, and Education study design for surgical technical skills training", *Arch Surg*. 145(2), pp. 197–201. doi:10.1001/archsurg.2009.266

Thiele, T., Pope, D., Singleton, A., Snape, D., and Stanistreet, D. (2017). "Experience of disadvantage: The influence of identity on engagement in working class students' educational trajectories to an elite university", *British educational research journal*, 43 (1), pp. 49 – 67.

Welsh Government (2017). Available at: <https://gov.wales/sites/default/files/publications/2018-02/welsh-in-education-action-plan-2017–21.pdf> (Accessed 2 January 2020).

Williams, S. (1998). *The use of Welsh and English as the Medium of Instruction*. Paper presented at the British Educational Research Association Annual Conference (September 11-14 1997: University of York).