Reflective Practice through Action Research: A Case of Functional Skills teaching In an Adult Educational setting

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Abstract

The article reports the outcomes of an action research project designed to investigate and develop task based constructivist teaching at a Further Education setting in the UK. The project was a collaborative one, involving two staff members who served as critical friends and the author-a teacher researcher. The aims were to build on basic research carried out by Kemmis and Mc taggart (2002) by investigating the issues from a more practical and applied perspective to form the basis for the further refinement of theory on task based learning. In-depth interviews were conducted and a structured questionnaire was designed in order to get learners' opinion and analyse their level of interest for a task based Constructivist teaching method. The data is presented in the form of means, percentages and bar diagrams. The article reports on the factors contributing to the positive responses of learners and useful insights into classroom practice.

Keywords: Action Research Project Based Learning Collaborative Learning

1.Introduction

In recent decades, there has been a lot of emphasis by policy makers on quality, educational standards, efficient and effective use of financial resources and pupils' performance. The continuous quality imperatives in Education are linked with schools and colleges being accountable for showing high standards due to the fear of falling enrollments that may lead to staff redundancies, funding cuts and even institute closures. Teachers, subject to determination of these quality standards, are being assessed on the basis of input they provide to their students, teaching quality, attainment in exams and progress they show.

Improving quality in teaching and learning is one of the top most agendas of any learning institute yet identifying the determinants of quality is not simple and straightforward task. There is not a single factor that contributes to improving quality in teaching and learning. Amongst important factors are outstanding teachers, strong leadership, varied use of resources and a well-balanced curriculum. If all these Quality assurance or quality enhancement factors come from top down approach, then it's what Kember (2000) points out is imposed for political' 'not educational reasons' and therefore it has been argued that bottom up approach that is student centered and one that focuses on teachers' professional development is viable. The change has to be seen by strengthening teachers' responsibility to become more committed to their own learning and participation of learners in student centered classroom activities (Day, 1999).

Research indicates that learners retain their knowledge when they utilize it in a practical situation. They learn better when they use the knowledge and take the ownership of their learning. It results in developing flexible understanding and lifelong learning skills (Hmelo-Silver, 2004). Conversely, prescriptive instructional designs guide learners to an extent that they achieve the desired outputs as they learn the concept following instructions and then practicing it further. However, too much focus on instructions and on results hinder learners' motivation, creativity and innovative skills since learning is not only about knowledge acquisition, but also about creating new knowledge collaboratively when addressing complex problems which requires innovative thinking (Nielson et al 2010).

The present study seeks to conduct an action research to seek for an alternative teaching approach based on constructivist ideas to improve the quality of learning, to address the low level of students' interest and the lack of engagement in lessons.

1.1 Action Research

Action Research has been the focus of attention into research paradigm for Managerial, Professional and Organisational Development in recent years.

The Action Research as a methodology dates back to 1940's when Kurt Lewin coined the term for the purpose of solving social problems (Mc Niff, 2002). In the teaching context, the concept of teacher as a Researcher has been promoted by Lawrence Stenhouse's work in the UK and Stephen Corey's work in the US that emphasised for practitioners to become researchers in their own rights. They believed in change in teaching methods that action research would bring as a result of its application in the classroom. Winter and Munn-Gidding's (2001:8) definition of Action Research incorporates: 'study of social situation carried out by those involved in that situation in order to improve both their practice and the quality of their understanding'. Waterman et al. (2001:4) provides a practically useful definition of Action Research as following:

'Action Research is a period of inquiry, which describes, interprets and explains social situations while executing a change of intervention aimed at improvement and involvement. It is problem focused, context specific and future oriented. ……. Knowledge may be advanced through reflection and research, and qualitative and quantitative research methods may be employed to collect data. Different types of knowledge may be produced by action research, including practical and propositional. Theory may be generated and refined and its general application explored through cycles of the action research process.'

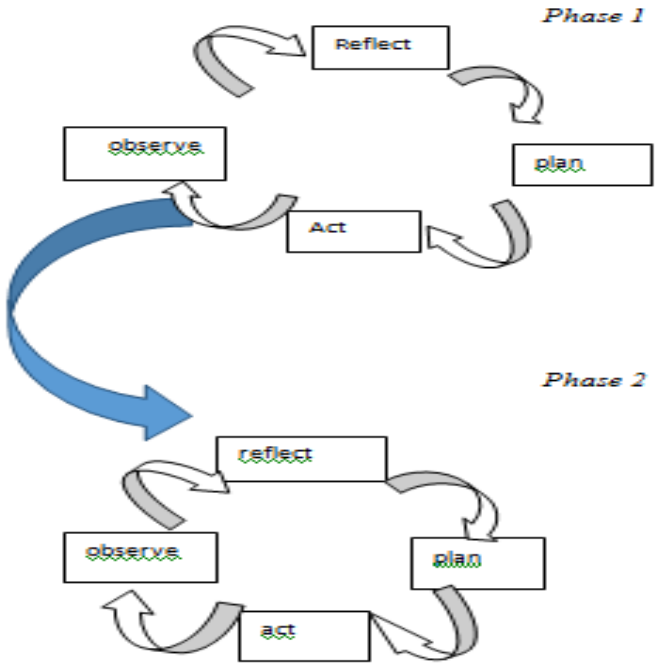
Action Research finds ways of investigating professional experience which links practice and the analysis of practice into productive results. In simple words it is a link between practice and reflection, between particular experiences and general ideas (Zuber-Skerrit, 2005). For professionals, it provides an extension to professional work by linking it with self evaluations and professional development. Self Evaluation involves reflection to one's own practices and Professional Development involves change in Professional Practice as a result of experience or new insight gained by reflection. 'Practitioners own the problem and feel responsible and accountable for solving it through team work by following a cyclic process' (Zuber-Skerrit, 2005).

1.1.1 Key Features of Action research

Many attempts have been made over the years to identify the key features that highlight the uniqueness of action research and differentiate it from other research methodologies. One of the major works amongst the researchers is the contribution made by Karr and Kemmis (1986), & Kemmis & Taggart (1988) that includes three distinct features of Action Research. These include : participatory character which refers to the 'actual participation that demands participants perceive the need fo r change and are willing to take part in change process' through research, democratic impulse requires participants to 'be seen as equals'. It has to be acknowledged that the researcher works as a 'facilitator of a change' consulting with participants on implementing the change. Throughout the research, the outcome is fed back to participants for validation. Finally, simultaneous contribution to knowledge and change or theory –practice gap requires practitioner to rely on their own experience/ intuition and is therefore different from other scientific researches (Meyer, 2000).

The planning stage involves an action plan with some agreed goals, Kemmis and Taggart (1988) elaborated that these can be encompassed in change in three registers: how language is used, what activities or tasks are employed and how social interactions are organized. The second action stage involves recognizing the need for flexibility and judgement while implementing the plan. Finally, the action has to be accompanied by observation and evaluation of results. For this purpose, a range of data collection methods can be used. The observation feeds into the next cycle of reflection and the cycle continues depending upon the previous results and reflections. In simple words spiral model of action research involves planning, acting, evaluating and reflecting (Kemmis & McTaggart, 1988). The spiral model involves generating new knowledge and exploring how and why questions when the focus is on providing solutions encountered by teachers in practice.

FIG:1



SPIRAL MODELOF ACTION RESEARCH(Kemmis & McTaggart, 1988)

1.2. Problem Based Learning

PBL (Problem Based Learning) is an exciting way to learn and engages students in solving authentic problems, stimulating discussion among students and reinforcing learning. It is preferable to mimetic learning environment in which student only watches, memorizes and repeats what he has been told.

PBL originally used in Science subjects is useful in the classrooms in replacing passive listening and rote memorizing with 'active investigation, participation and problem solving'. PBL enables learners to see learning in the context of real life situation and learners can directly link their learning with the real lives. Most importantly, it is wrongly perceived that PBL takes enough time and teaches only few aspects of learning. In fact, 'because PBL requires students to read and write, research and analyze and think and calculate…… and lend themselves to interdisciplinary courses. This shows students the connection between and among the subjects, helps them with a greater sense of their schooling as a unified whole, and helps them use their knowledge of one field to increase their understanding of another' (Delisle, 1997).

Problem Based Learning (PBL), as a general Model, was developed in medical education in the mid 1950's and since then has been implemented in a number of medical schools. It replaces the traditional lecture based approach to teaching. It has applied and experimented in other fields or areas of education including business schools. There are many strategies of implementing PBL. Here I will throw light upon Burrow's model of PBL (1992).

'Within the area of second Language Learning, Problem Based Learning includes those approaches in which students learn the target language by using it, rather than being presented with and practicing predetermined language structures'.

2. Aims and Objectives

To guide the research Constructivism and Collaborative Learning were used as a conceptual framework (or theory of understanding) because of its focus on social and communicative aspects of learning. The lesson was planned around key considerations that included creation of students' autonomy and initiative during the lesson, use of other resources instead of prescribed books, critical thinking terminology, creation of tasks keeping in mind students' interests, engagement of learners in group activities, provision of enough time to work around concepts

and chances for them to use their natural curiosity (based on Brooks & Brooks). The main aims of conducting this research are:

- What are the experiences of Functional Skills Students with Task Based or Problem Based Learning?
- Is the instructional design useful in covering all the Functional Skills in a Problem Based Learning?
- How interested and engaged learners feel while doing the task?
- What are the learners' preferences in terms of achievement when using Problem Based Tasks as compared to Whole Class Interactive Strategies?

3.Literature Review

Problem Based Learning originates from the views of Constructivism theories. Constructivism is a flexible classroom environment engaging students in active learning. The central idea behind constructivism is that human beings get knowledge upon the foundation of previous learning and that the prior learning influences the acquisition of new knowledge (Phillips, 1995). The key idea is the construction of ideas rather than the inert reception of ideas. It is not confined to a teaching strategy based on a specific curriculum. It serves as one of the sources of information to students, the teacher challenges their previous concepts by actively engaging them, uses responses for planning next lessons, encourages participation from students and assists them in understanding their own cognitive skills by encouraging their autonomy. Research indicates that learners remember 90% of what they say and do and only 20% of what teachers say (Materna, 2007). This provides evidence for creating classrooms that fit the way student learn an essence of Constructivism. It trains learners how to learn by improving their thinking skills.

In his book 'In Search of Understanding, the case for the Constructivist Classroom (1993), the authors Brooks & Brooks elaborate five Principles of Constructivist Approach for teachers in the classroom: Students would be able to transfer learning to real life situations and adaptable to change their views, Learning should center around key concepts and assessors should continuously assess students understanding around them, Students viewpoints should be sought and valued, teachers would be flexible to change their teaching strategies to fit around the class cognitive requirements and feedback should be non-judgmental and within the context (Brooks & Brooks, 1993). In simple words, Constructivist Learning means understanding comes with the interaction with the environment. Secondly, cognitive conflict or puzzlement is the stimulus for learning.

PBL focuses on a real-world problem, learners must assume responsibility for their own learning, the teacher's role becomes that of a guide or facilitator, and the deliverable must relate the learner's life and/or career (Barrows, 2002).) PBL had a positive impact on students" science achievement and the permanence of knowledge **(**Sarikaya & Benli, 2012) **Problem based learning** helps in the creation of lifelong learners with flexible skills that are crucial for today's information age (Hmelo-Silver, 2004).

Research indicates that moving from lecture to problem-based learning in a biology course led to an increase in interest, inquisitive learning and collaboration among learners (Nguyen & Siegel, 2015).Learners who took responsibility of their peers learning in collaborative PBL scored higher in multiple choice exams and showed high self efficacy (Iwamoto, 2016).Similarly, problem-based learning implemented in a college electrical engineering course increased scores in learning outcomes, also promoted problem-solving and self-motivation as compared to traditional lecture (Mahindra and Mahindru, 2001). Krajcik & Blumenfeld, 2006) have highlighted the problems faced by learners that include disinterest and boredom in traditional lecture based classrooms. Amirshokoohi (2013) found that students better appreciated the nature of science through their own participation in the process as compared to imparting knowledge via traditional methods. Since traditional methods that utilize lecture based teaching methods are considered to be inadequate in meeting the learners' professional demands (Nielson, et al, 2010). They further contend that the inclusion of PBL or inquiry-based learning in a teacher education course resulted in deeper conceptual understanding for students and better application of theories. A student focused approach to teaching is led by constructivist active learning strategies which are viewed as an experiential process.

PBL comes with its own challenges if it's not designed or carried out effectively. Schmidt (1983) and Allen et al. (1996) have offered recommendations for successful creation of problem-based learning curricula. The step-by-step guide provided by Schmidt (1983) included identification of key terms, definition and analysis of the problem, formulation of learning objectives, collection of information, and finally synthesis of learning.

Allen et al. (1996) recommended the importance of the learning facilitator, class format, collaborative group structure, and guidance through carefully constructed problems in the creation of problem based learning curriculum aimed at engaging all learners. Barrow (1992) argues that the role of a tutor is to stimulate Meta cognitive skills of learners and he should avoid giving his answers or opinions. The second role of the tutor is to challenge the learners' thinking.

4. Methodology

4.1. Background

This study is conducted using Action Research Approach making use of data gathering from formal and informal interviews, participant observation and a review of assignments/ projects. The setting is one of the branches of Community First Foundation in the UK. The participants included 12 adult learners of Functional Skills Entry Level 2and two staff members. The participants comprised of learners from different cultural back grounds. Three of them came from Iraq, five from Somalia, two from Afghanistan and two from Srilanka. Learners from Srilanka and one from Iraq fall under confident learners who had a good educational background. In total, there were three males and the remaining learners were females. The students were selected due to their willingness to participate in the project. Data is gathered by interviewing these learners and the staff members and by conducting informal meetings with them.

4.1.1. Ethical Considerations

It is essential to obtain consent from every participant in the research, in classroom setting one needs to explain to the participants that they are taking part in a research project. Besides twelve learners, two staff members were included to serve as critical friends. The participants and the critical friends were familiarized with the research objectives and the importance of self-reflection and accountability. Talking regularly with the critical friends is important as they give a regular feedback on the work. 'A more formal exercise involves convening a validation group, which is a group of colleagues who you know will be supportive and will also offer a critical feedback' (Whitehead, 2005), were avoided due to time constraint.

4.2 Context, content and lesson delivery

After a thorough research, Functional Skills/ESOL Learners (Entry 2) were asked to think through the topic of their interest. The students agreed on doing a project on 'Birthday Planning' as they already had worked on numbers, shopping and adding the costs in the previous topic: 'Shopping'. Secondly they had learnt the concept of informal and formal invitations. This task would enable them not to extend their previous learning but also stimulate their mind by taking part in active discussion about arranging a party within the limited resources. The learners were asked to plan a birthday party of their son / daughter with a budget of 400 pounds and consider at least 15 friends of their daughter/ son to attend the party. It was a formal invitation as they would think about the invitation cards (write down a sample card), venue, food (at least 5 items), decorations, birthday cake music, games and goody bags they would offer considering the limited budget they have in hand. They were instructed to plan an enjoyable birthday party with two of their best friends who are ready to help them in organizing their son/ daughter's birthday.

4.3. Use of target language

The learners were prepared to focus on the target language (use of future tense) by showing few pictures of a birthday party. The class was divided into four groups; each group consisted of three people. Each group would select a group name amongst the options provided to them. The students were asked to get familiarize themselves with the pictures of birthday party and then write few sentences what the people were intended to do in their parties. In this way, the students were prepared with the language demand of the problem solving activity. There were few pre teaching vocabulary based activities and structures that would be useful to comprehend before finding the solution to the problem.

Selecting Problems that are related to the learners' lives to increase their interest is one of the difficult tasks in the Problem Based Learning. The problems should require students to make judgments and conclusions provided the questions generated should be open ended, likely to generate opinions. Keeping it in view, the possible options was given that learners would likely to discuss in the group discussions: (Is celebrating at home easier or outside? How about the price of food items? Are you going to print cards / buy invitation cards? How to find out the prices from the local shops?)

4.4. Grouping Learners and Provision of Resources

The learners were carefully grouped together learners to increase learning opportunities in a problem based activity.

In a multi-level proficiency class of Entry Level 2 learners, the learners came from different backgrounds and learning style preferences. It was assured that two learners of the same ethnic origin should not be placed in the same group in order to prevent them speaking their own language. Secondly, a variety of resources were provided according to their preferred learning styles (visual aids, kinesthetic (body movements) and audio (tape script) and useful internet websites. It was assured that at least one individual in a group is relatively aware of browsing and surfing websites, similarly one individual should have strong literacy skills/ Mathematics etc. While the students were working together, continuous observation and resources were provided, notes were taken down related to the problems they encountered while doing the task and the level of each individual's participation and communication while doing the activity was noticed.

4.5. Follow up and Assess Progress

Before deciding on the follow ups, teacher had to consider the language, numeracy and ICT proficiency of the learners. Entry Level 2 learners were asked to choose a group leader and present the solution orally by submitting the mini tasks they had worked on while solving the problem. These included (the list of food items and their total cost, the cost of birthday card / sample card, the price of venue, gifts). The observation was carried out by critical friends and the researcher whether learners were experiencing difficulties with grammar points, pronunciation, vocabulary, reading strategies (e.g. skimming for information) or pragmatic structures (e.g.: invitation, requesting information etc.). These difficulties provide teachers for focused instructional support and guidance and could be integrated as teaching aims in the upcoming lessons. Finally, the learners were assessed on two points:

A level of communication and group participation

B effectiveness in the use of language

4.6. Observation and feedback

A crucial element in using this approach in classroom teaching is to find out whether this approach is meeting the learners learning requirement or not. The questionnaire used is detailed in Mathews-Aydinli (2007) research to answer this query:

Are learners interacting with each other and sharing information?

Are they working in groups rather than relying on teachers' guidance?

Are they speaking English (and using functional skills literacy, numeracy & IT)?

Inputs were received from the 12 learners who participated in this activity. The questionnaire was distributed amongst students to get their view points in order to them into discussion/ interview to explore their thoughts and experience. To ensure that there was no biasness towards the PBL assignment, they were asked to comment freely about the positive and negative aspects of the task they did in the classroom without informing them that it was PBL Methodology.

5. Evaluation &Presentation of Data

The strength of evaluation in action research is dependent upon the richness in the sources of data collection. In any educational setting the sources of collecting data include learners' feedback, school records, observation, collaboration and dialogue with teachers, learners' results, observation in the classroom, field notes etc. Evaluation of data would borrow various data gathering and analysis methodologies, in some cases mixed methods can be used. Questions framing what methodology best suits the research area depends upon the evaluation questions that frames the study. It is through the triangulation of data that recommendations and conclusions were carried out.

In formal research random or representative sampling is carried out as it is aimed to produce knowledge which is generalizable. In action Research, knowledge is applied to local situation. The prime criterion for choosing a particular data gathering method in action research is whether it is anticipated that the method employed will give useful information about the practice under study.

5.1. Internal Validity

Internal validity is achieved by the use of triangulation (use of more than one method to cross check findings). Validity also depends upon element of reflexivity and transparency over the choices made throughout the

Research Process. A review of literature allows to mention variety of reasons why triangulation is selected. It aims to look at the issue from different positions and then converging the results (Creswell, 1999). Three sources of information were used that increase the reliability and validity of research. These include questionnaire on a 3 point Likert scale, interviews and a feedback from colleagues. The third source would provide the feedback as a critical friend to elaborate on the things that could be missed out during data analysis.

5.2. Analyzing and Synthesizing data

The class was divided into four groups; each group consisted of three learners and presented them with them the real life scenario of arranging and budgeting a birthday party (the use of future intentions). The outcome was evaluated by interviewing, observation, questionnaire and feedback from critical friends. In the end, by cross referencing and reflective analysis, it was concluded that at Entry 2 level, the whole lesson based on Task Based Learning might brought forth positive results in terms of learning if the learners were already familiar with the functions of language used in the task or certain ICT skills otherwise they would expect a controlled practice from a teacher that by definition does not form a part of the Task Based Learning.

Tables of average ratings from questionnaires or test scores are meaningless without links to the instruction experienced. Qualitative research is grounded in the assumption that individuals construct social reality in the form of meanings and interpretations, and that these constructions tend to be transitory and situational. Frequently meanings and interpretations are determined through studying situations intensively in their natural setting. Few samples from the learners' interview detail their thinking towards the experience:

Student 1: I feel excited and a bit worried about the task. I enjoyed working with the group. It was a great support as I am not confident about the spellings so Lisa helped in spellings. I am good at Math so I really enjoyed picking up the menu and doing calculations. It took time to think about the venue and we searched on the net and got lots of information about places where we get decoration and Cakes. I explored changing Font size and using word art in the MS Word. Hodan was a good support ….

Student 2: The good thing was that we were together and enjoyed planning and deciding about food / decoration/ venue. We finally chose McDonalds as a venue. I think kids love McDonalds. The teacher helped us in searching cake prices on internet. It was fun. I practiced typing on Word document and few new keys on computer. I really enjoyed the activity. I enjoyed writing a Birthday card.

Student 3: I think it was quite fun. We talked about food, prizes, decorations and costs. We visited different websites and prepared our guest lists. Deciding on the cake design and games was fun but ours was expensive…. yes, it was interesting. I like sharing with friends but need more time to plan….

Student 4: In our group, we already planned who is going to do what task so that we save time. After deciding on food, venue, cards, guest lists and games we divided the tasks. I wrote the card and guest list. The interesting part is visiting the websites to decide the venue and cake. Samir wrote down the prices and food item. We enjoyed it!

While evaluating the outcome of Task Based Learning, the level of learning, interest, engagement and ownership of learning amongst Entry Level 2learners was explored. The impact of team work, collaboration and use of ICT skills while doing a task based Learning was further examined.

Numerical or Statistical data analysis may be of great significance in certain areas for example a breakdown of learners' experience, therefore bar charts averages and percentages are employed. Table 1.shows the responses on various questions in percentages, average and standard deviation. The response to the query 'I need more support from the teacher during the task' provides useful insight to the teacher as it shows that 50 % of learners believed in it. Therefore, the best strategy to adopt is to teach target language / vocabulary in a lesson prior to the PBL lesson by using whole class interactive method. Results indicate the responses of Q4, Q8 and Q8 with standard deviation as zero due to all responses having exactly the mean value.

6. Actions to Be Taken Based on Action Research

The presentation in the form of pie chart (Fig:5) presents the area that needs to be focused upon after conducting the Action Research. This has been identified after getting response from the participants during observation, interviews and questionnaire. Interestingly, 50% of learners agree that they needed more support from the teacher during the task when 58% had agreed that the support before the task provided by the teacher was enough. This provides useful insight for the teacher being reflective about preparing learners to be more independent in their approach.

While PBL works as an effective approach for Entry 3 or high level learners due to their better proficiency and independence in learning at that level, for low levels (Entry Level 1,2) certain level of support (work sheets/ resources/ demonstration of language etc.) are required from the teacher.

There are moments when learners look up to the teacher while doing their work to get a remark, encouragement or feedback from the teacher. Although they seem to enjoy the team work and independence, they would still expect answers in the correct/ Incorrect form. The idea of allocating a group leader and presenting the solution seemed challenging for few learners yet they felt being independent they would experiment better.

6.1. Benefits

Generally, the students were engaged and motivated while doing the task. They learnt how to manage their own learning through discussion, planning and problem solving. Learners had the option to use their creative skills in deciding on cards, decorations and cakes. Problem Based Learning fostered their functional skills. The group formation provided a platform for the improvement of their interpersonal and collaborative skills. Learners worked practically, demonstrated cooperation and accumulative expertise with each other. They used the target language (use future tense, suggestions (I think, we may, we should etc.).

6.2. Challenges/ Limitations

The study was limited to a smaller class size due to the required small group sizes and the amount of time required of the teacher to spend with each group in a 90 minutes' lesson. By utilizing a larger sample size, the transferability or application of this study would be enhanced. Since action research allows teachers to study their own classroom in order to better understand them and to improve the quality of teaching effectiveness, the results cannot be regarded as an appropriate fit for all classroom problems.

Secondly, teacher's role is less that of an instructor who transmits information and organizes activities, it is a critical role. Teachers should attentively listen to what is called the teachable moment. At Entry Level 2, learners' expected a little more control from teachers. Few think that teachers are abdicating rules if not moving to a certain direction or providing answers to the learners. There are learners who look forward to confirm the correct answers. The tactful response in that case would be the employment of several strategies; either by giving multipleoptions to a learner that could be elicited by the team members or by encouraging team work environment.

Conclusion & Recommendation

7.1. Conclusion

The focus point for this action research strives to find out the impact project based learning has on student involvement. There was substantial observational evidence that project-based learning is a better, more effective teaching practice for students due to the way it positively changed their learning behavior, engaged students, and enhanced their learning environment. The activity has helped them practice speaking English for advice/ future arrangements. Problem Based Learning proved helpful in engaging, motivating learners and applying language in practical situation. PBL is an innovative approach where students drive their own learning through inquiry, standards alignment, and collaborative research (Bell, 2010). Qualitative data obtained from student focus groups, and field notes from the two participating teachers provided means of assessing and the overall effectiveness of the research intervention.

The data analysis generates results in terms of agreeableness from the learners. Learners agreed that they needed more support from the teacher (the interview validated that they needed feedback and response while doing the activity), 92% of them found PBL an interesting activity, they felt creative and got chance to share ideas with the group members. All agreed that it was interesting to use internet/ IT while doing the task. Despite few learners less confident in using ICT, they were keen on using internet and almost all of them enjoyed drawing / working on cards and agreed that the resources were enough.

7.2. Recommendations

Those who consider problem based learning in teaching English or Functional Skills are advised that in order to get best results from this practice teacher should pre teach vocabulary / target language before providing them with the task. The language would be later on practiced as a free practice activity. This could be done by whole class interactive teaching method in the earlier lesson prior to the PBL. Similarly, other Functional Skills (ICT) could be preceded with the same methodology in order to make sure learners have a background of essential ICT that would be applied in PBL.

Against a workplace culture that promotes conformity, data from the study show that action research succeeded in assisting teacher participant to engage in reflective practice in the workplace. Findings from this study are in line with the educational literature on reflective practice and its link with improving quality of Education. Evidence from the study shows the possibility to bring about transformative learning through action research, therefore, teachers should consider carrying out action research in order to become reflective and innovative professional practitioners.

References

Barrows, H. S. (1992) cited in: Wilson, B. G. (1996) in 'Constructivist Leaning Environments, Case Studies in Instructional Design Educational Technology Publications, New Jersey.

Benli, E & Sarikaya, M (2012), 'The investigation of the effect of problem based learning to the academic achievement and the permanence of knowledge of prospective science teacher: the problem of the boiler stone', Social and Behavioral Sciences 46 (2012) 4317 – 4322.

Brooks, JG. And Brooks, M. G. (1993), In Search of Understanding: The Case for Constructivist Classroom. Alexandria, Virginia, Association for Supervision and Curriculum Development.

Carr, W. and Kemmis, S. (1986) Becoming Critical: Education, Knowledge and Action Research. London: Falmer.

Day, C (1999), Developing Teachers: the challenge of Life Long Learning, Falmer Press. Dewey, J (1916) as cited in Delisle R (1997) 'How to use Problem Based learning in the Classroom', ASCD Publication, US.

Delisle, R, (1997),How to use Problem Based learning in the Classroom, ASCD Publication, US.

Elliot, J. (1991) Action Research for Educational Change. Buckingham: Open University Press.

Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? Educational Psychology Review, 16(3), 235 - 266.

Iwamoto, D, H (2016), 'The effect of Project Based Learning on Student Performance: An Action Research study, International Journal for the Scholarship of Technology Enhanced Learning, 1(1), 24-42.

Kazempour, M., & Amirshokoohi, A. (2014). Transitioning to inquiry-based teaching: Exploring science teachers' professional development experiences. *International Journal of Environmental and Science Education, 9*(3), 285-309.

Kember, D (2000),Action Learning and Action Research, Improving the Quality of Teaching and Learning, Kogan Page.

Kemmis, S. and McTaggart, R., (eds.) (1988). The action research planner. Victoria: Deakin University Press.

Krajcik, J. S. & Blumenfeld, P. C. (2006). Chapter 19. Project-based learning (317 – 333). New York: Cambridge.

Mahendru, P. & Mahindru, D. V. (2011). Problem-based learning: Influence on students' learning in anelectronics and communication engineering course. Global Journal of Researchers in Engineering& Electronics Engineering, 11 (8).

Materna, L (2007), Jump start the Adult Learner: how to engage and motivate adults using brain- compatible strategies, Sage Publications Ltd.

Mathews-Adylin, J. (2007), 'Problem Based Learning and Adult English Language Learners', Centre for Adult English Language Learning, CAELA.

Mc Niff, J. (2002), Action Research for Professional Development: a concise advice for new action Researchers, 3rd edition, Dorset, England.

Meyer, J (2000), Using Qualitative Methods in Health Related Action Research, British Medical Journal, pp: 178-181.

Nielsen, J. D., Du, X. Y., & Kolmos, A. A. (2010). Innovative application of a new PBL model to interdisciplinary and intercultural projects. International Journal of Electrical Engineering Education, 47(2), 174-188.

Nguyen, P. D. & Siegel, M. A. (2015). Community action projects: Applying biotechnology in the real world. The American Biology Teacher, 77(4), 241-247.

O Leary. (2004), as described in Valsa Koshy (2005) 'Action Research in improving Practice: A Practical Guide', Sage Publications.

Phillips, D C. (1995), The good, the bad, and the ugly: the many faces of constructivism: Educational Researcher, 24(7), 5-12.

Waterman, H; Tillen, D; Dickson, R. and de Koning, K. (2001) 'Action Research: a systematic Review and assessment for Guidance; Health Technology Assessment, 5:23.
Whitehaed J & McNiff J (2005), 'Action Research for Teachers, A Practical Guide', David Fulton Publishers.
Winter, R. and Munn- Giddings, C. (2001) A Handbook for Action Research in Health & Social Care, London, Routledge.
Zuber-Skerrit, O (2005), New Directions in Action Research, Chapter 2, Taylor & Francis e-Library.

Appendix

Fig 2. (Table) Response of learners on 3 point Likert scale

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Agree (%)	83%	58%	92%	100%	50%	17%	75%	100%	100%	92%
Part agree (%)	17%	25%	0%	0%	8%	17%	8%	0%	0%	8%
Disagree (%)	0%	17%	8%	0%	42%	67%	17%	0%	0%	0%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mean	1.166	1.58	1.166	1	1.9166	2.5	1.466	1	1	1.0833
mode	1	1	1	1	1	3	1	1	1	1
standard dev	0.38	0.79	0.577	0	0.966	0.797	0.792	0	0	0.2866

Fig 3

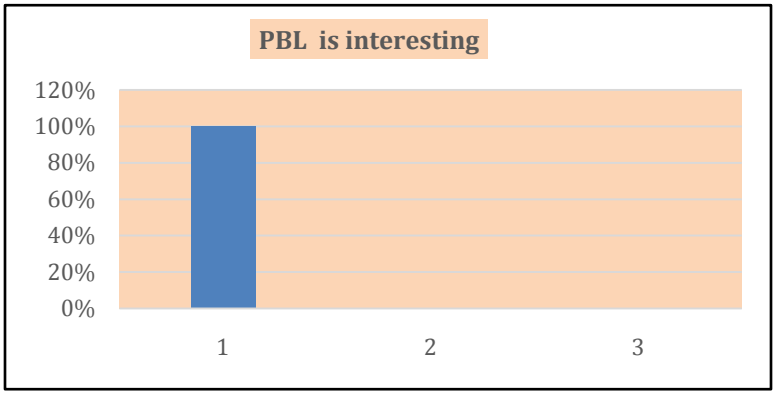


Fig 4.

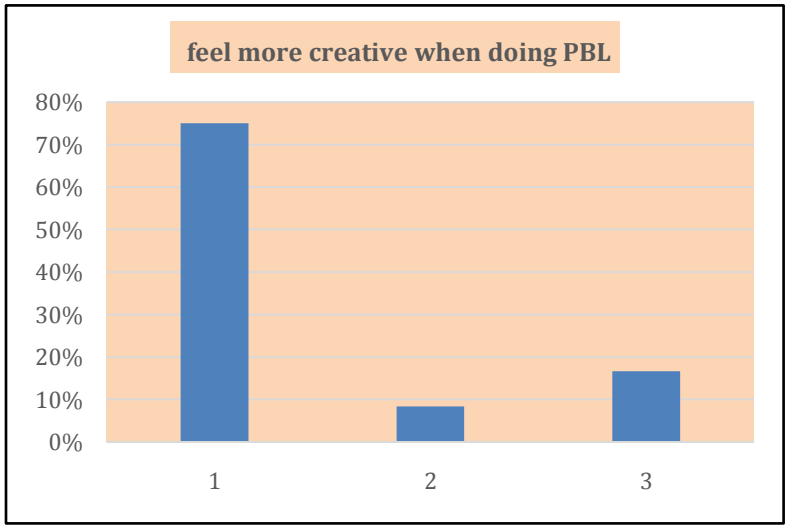
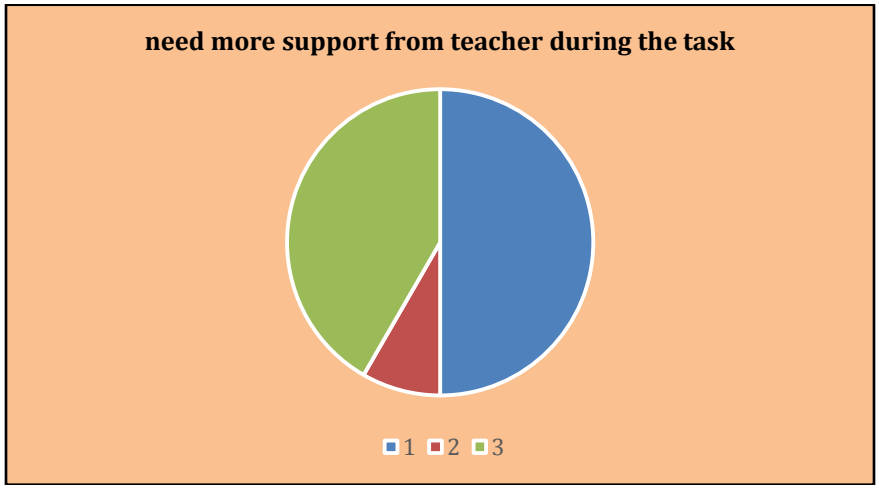


Fig 5.



Questionnaire

	Agree	partially agree	disagree
1.I learn by sharing ideas with the group members			
2.The extent teacher provided with the support before the task is sufficient			
3.I don' t find any problem in sharing information in English			
4. I find interesting to use ICT during PBL			
5.I think I need more support and feedback during the task from tutor			
6.I face problems in communicating with my colleagues			
7.I think I am more creative when I work on the project			
8.The resources provided by the teacher were sufficient for me			
9.I got enough chance to participate / communicate with group members			
10. problem based learning is interesting			