



**MATPD**  
A MULTI-MODAL APPROACH TO  
TEACHER PROFESSIONAL DEVELOPMENT

A Multi-modal Approach to Teacher Professional  
Development in Low Resource Settings

# ACTION RESEARCH COMPENDIUM

Afghanistan | Maldives | Nepal | India

Supported by



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International Development Research Centre  
Centre de recherches pour le développement international

Canada



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# ACKNOWLEDGEMENT

We take this opportunity to express gratitude to everyone who has been key to the development of the Action Research Compendium. The report would not be complete without thanking the fellows and the teachers who spared time from their busy schedule and worked relentlessly to address educational issues in their context.

We would also like to thank the academic mentors from TISS and other Indian academic institutions as well as field mentors from various universities across countries. In this regard, we acknowledge the work of Field mentors and Academic mentors in the Islamic University of Maldives, Kathmandu University, Swedish Committee for Afghanistan and Villa College for providing continuous guidance and support to the fellows during this process.

Last but not the least, it is obligatory to thank the valuable contributions of the Research Team members in the successful completion of this Action Research Compendium.

This work was supported by the Global Partnership for Education Knowledge and Innovation Exchange, a joint endeavour with the International Development Research Centre, Canada.

## DISCLAIMER

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# ACRONYMS

<b>AR</b>	Action Research
<b>CBS</b>	Community Based School
<b>CLT</b>	Communicative Language Teaching
<b>ESL</b>	English as a Second Language
<b>FGD</b>	Focus Group Discussion
<b>GSPBL</b>	Gold Standard Project Based Learning
<b>ICT</b>	Information and Communications Technology
<b>MATPD</b>	Multi-Modal Approach to Teacher Professional Development
<b>OER</b>	Open Educational Resources
<b>OLabs</b>	Online Labs
<b>PBL</b>	Project Based Learning
<b>PhET</b>	Physics Education Technology
<b>SATE</b>	South Asian Teacher Educators
<b>TPACK</b>	Technological Pedagogical Content Knowledge
<b>TPD</b>	Teacher Professional Development
<b>UDL</b>	Universal Design for Learning

# DEMOGRAPHIC PROFILE OF FELLOWS

The below tables present the demographic profile of the fellows who were part of the South Asian Teacher Educators (SATE) fellowship.

## AFGHANISTAN

The 15 research fellows who participated in the study are based in different regions across the country in eight provinces, and are engaged in diverse professions. The sample included teacher educators, government officials, and NGO professionals. Five fellows had Master's degrees, and 10 were Bachelor's (BA and BSc) degree holders. Out of 15 fellows 7 of them were women.

AFGHANISTAN FELLOWS: PROFILE					
Fellow	Gender	Profession	Qualification	City	Site
AF1	F	Teacher educator in TTC	MA (Teacher Education)	Kunar/Asad Abad	Urban
AF2	M	MandE and reporting specialist (MoE)	BA (English Language Literature)	Kunar/Asad Abad	Urban
AF3	M	MandE Member (MoE)	BSc (Mathematic)	Helmand/ Lashkargah	Urban and Rural
AF4	M	Teacher Educator in TTC	MA in Social Sciences (Educational Sciences)	Paktika/ Urgon	Rural
AF5	M	Teacher educator in TTC	BA (English Literature)	Paktika/ Sorobi	Rural
AF6	F	Teacher Educator in TTC	MA (Teacher Education)	Jowzjan/ Shaberghan	Urban
AF7	F	Teacher Educator in TTC	BSc (physics)	Jowzjan/ Shaberghan	Urban
AF8	F	Academic and professional member for TPD (MoE)	BA (English Literature)	Kabul city	Urban
AF9	M	Senior Education Officer at a NGO	BSc (Physics)	Balkh/Mazar Sharif	Urban
AF10	F	Master Trainer at an NGO	BSc (Biology)	Balkh/ Mazar Sharif	Urban
AF11	M	Master Trainer at an NGO	MBA (Management)	Nangarhar/ Jalalabad	Rural
AF12	F	Master Trainer at an NGO	MA (Pashto Literature)	Nangarhar/ Jalalabad	Rural
AF13	F	Master Trainer at an NGO	(BSc (Mathematic)	Ghazni/ Qarabagh	Rural
AF14	M	Master Trainer at an NGO	BSc (Physics)	Ghazni/ Qarabagh	Rural
AF15	M	Academic and professional member for TPD (MoE)	MA (Education)	Kabul city	Urban

## MALDIVES

A total of 15 fellows from Maldives participated in the study initially, however, due to unavoidable circumstances, 2 of them could not complete the Action Research. Therefore, the compendium consists of 13 participants' action research from Maldives. The fellows cover various regions of the Maldives, from the urban capital to rural islands. They also included teacher educators, school principals, leading teachers as well as educational administrators. They were all graduates from the postgraduate levels. Five were males and 10 were females.

MALDIVES FELLOWS: PROFILE					
Fellow	Gender	Profession	Qualification	Atoll	Province
MF1	F	Teacher Educator	Ph.D in Philosophy. B.A. in Educational Planning and Management	Kaafu	North Central
MF2	F	Teacher Educator	Ph.D in Philosophy . M.Sc. in Education Management	Kaafu	North Central
MF3	F	Leading Teacher	M.A. in Education. Bachelor of Arts in Teaching English As Foreign Language	Kaafu	North Central
MF4	F	Teacher Educator	M.Ed. B. Ed. - English	Kaafu	North Central
MF5	F	Teacher Educator	Post -Graduate Certificate of Teaching in Higher Education (PGCTHE) ongoing. B.A. in Teaching English as a Foreign Language.	Kaafu	North Central
MF6	F	Teacher Educator	M.Ed. (Curriculum and Instruction). B.Sc. (Chemistry, Botany, Zoology)	Kaafu	North Central
MF7	F	Teacher Educator	M.Ed. in Management and Leader. B.A. in Teaching English as a Foreign Language	Kaafu	North Central
MF8	F	Education Administration	M.A. in Education. Postgraduate Diploma in Educational Leadership,	Kaafu	North Central
MF9	M	Deputy Principal/ Teacher Educator	M.Ed. Bachelor of Teaching Secondary	Kaafu	North Central
MF10	M	Leading Teacher	M.Ed. Education Management and Leadership. Bachelor of Teaching Secondary.	Kaafu	North Central
MF11	F	School Principal	Ph.D of Philosophy. M.Ed. Leadership and Management. Master in Research Studies.	Alif Alif	North Central
MF12	M	School Principal/ Teacher Educator	M.Ed. Bachelor of Teaching Secondary.	Raa	North
MF13	M	Teacher Educator	Ph.D of Philosophy -Education M.Ed. Bachelor of Teaching Secondary	Haa Dhaalu	Upper North

## MALDIVES FELLOWS: PROFILE

Fellow	Gender	Profession	Qualification	Atoll	Province
MF14	M	Leading Teacher/ Teacher Educator	M.A. in Education Bachelor of Education-Educational Administration	Laamu	South Central
MF15	F	School Principal	Ph.D of Philosophy -Education M.Ed. -Management. B. Ed.	Seenu	South



Photo: TISS

*Maldives Fellows with the MATPD Project Team*

## NEPAL

The 15 fellows who were part of the study are based in different regions across the country and are engaged in diverse professions. The sample comprises teachers, teacher educators, school leaders, government officials, NGO professionals and a Mphil. student. While three of them held undergraduate levels of education, the others were from postgraduate levels.

We have ensured gender and social inclusivity in our selection of fellows. There are almost an equal number of male and female fellows in the cohort (8M, 7F) who are predominantly from the urban district (14/15). Within the urban district, around 50% of the fellows are based out of Kathmandu, while the remaining 50% reside in far eastern /western parts of the country. The cohort comprises 2 from minority groups and 2 persons with disability.

NEPAL FELLOWS: PROFILE							
Fellow	Gender	Profession	Qualification	City	Site	Minority	Disability
NF1	F	School teacher	B.Ed.	Kathmandu	Urban	No	No
NF2	F	Science teacher in a school	B.Sc, M.Ed., M.Bs.	Dhangadhi Kailali	Urban	No	No
NF3	F	Pre-school principal	Bachelors in social sciences, Masters in STEAM Education	Kathmandu	Urban	No	Yes
NF4	F	Faculty and ECA coordinator at a NGO	B.Sc, M.Sc, Ph.D in Education	Kathmandu	Urban	Yes (Jainism)	No
NF5	M	Assistant professor (TEI)	B.Ed. and M.Ed.	Melauli	Rural	No	No
NF6	M	Government official (CDC, ERO)	B.Ed. and M.Ed.	Kathmandu	Urban	No	No
NF7	M	Science teacher in a school and Academic Coordinator	B.Sc and M.Sc	Pokhara	Urban	No	No
NF8	F	Student (Mphil Scholar)	B.Sc. and M.Sc (nursing) M.Phil in STEAM Education	Morang	Urban	No	No
NF9	M	Science teacher in a school	B.Sc, B.Ed. and M.Ed.	Dhangadhi Kailali	Urban	No	No
NF10	F	NGO Professional	Bachelors in business studies	Kathmandu	Urban	No	No
NF11	M	Science/Math teacher in a school Head teacher	M.Sc in Maths, B.Ed., M.Phil in STEAM Education	Lamki Kailali	Urban	No	No
NF12	F	Science teacher in a school School Principal	B.Sc, M.Sc and M.Phil in STEAM Education	Kathmandu	Urban	Yes (Newar)	No
NF13	M	Science teacher in a school	B.Sc, B.Ed. and MA (Anthropology)	Pokhara	Urban	No	Yes
NF14	M	Freelance (Teaching bachelor students)	Bachelors in engineering, M.Ed. (Maths)	Kathmandu	Urban	No	No
NF15	M	Science teacher in a school	M.Sc, Mphil in STEAM Education	Kushma Parbat	Urban	No	No



Photo: TISS

*Nepal Fellows with the MATPD Project Team*



# SECTION I

## Introduction to the Action Research Compendium

### Introduction to the MATPD Project and its objectives

A Multi-Modal Approach to Teacher Professional Development (MATPD) project is to address evolving educational changes in low resource settings. The project is designed for under-resourced and developing contexts and tailored to align with the unique national contexts of Afghanistan, Maldives and Nepal. The MATPD involves the usage of diverse technologies and modalities for Teacher Professional Development (TPD) that are context-appropriate, combined with action research and social learning through formation of Professional Learning Communities while building on the communities of practice that exist or get developed through mobile-based chat groups.

The project aims to influence policy, practice, and further research in distance TPD in South Asian countries. The specific objectives are to:

- Generate knowledge about the enablers for an integrative distance TPD model in low resource settings.
- Enhance the capacity of teacher educators and teachers by developing their leadership skills and knowledge in constructive use of new media and technology to enhance their practices.
- Mobilize support of and share insights with relevant stakeholders on adapting, adopting, and sustainability of pedagogically rich TPD approaches.

### Importance of Action Research in the Context of Professional Development and improvement of practice

Teacher as researcher, conducting action research was proposed by Lawrence Stenhouse in 1975. The Britain scholar's conceptualization moved the paradigm from teachers as subjects of research to teachers as researchers themselves. He visualized teachers as autonomous professionals for self directed learning of their own practice.

*"In short, the outstanding characteristics of the extended professional is a capacity for autonomous professional self-development through systematic self-study, through the study of the work of other teachers and through the testing of ideas by classroom research procedures" (Stenhouse, 1975, p. 144)*

The concept of teachers as researchers and their connection with action research hold a lot of importance in South Asian and low resource countries for various reasons. It allows teachers to test their own ideas by researching their own practice and also provides autonomy to teachers as well as ownership of their own professional development. By studying the intricacies involved in the practice and studying evidence of learning through students' artifacts, teachers can simultaneously reflect on practice and make decisions to improve it. This iterative process of reflection and action is inbuilt in the phenomena of action research. Stenhouse (1975) uses a phrase to define this

process- 'autonomous professional judgment'. As we are aware, teaching involves taking decisions both before teaching by planning and in-the-moment decisions at every step of teaching. The process of action research provides space to reflect on these everyday decisions. This can pave the way for improvement in decision-making in their practice. Regular teaching does not provide teachers with the opportunity to explore new practices in the classroom due to various reasons, including the pressure of completing the syllabus. Action research can be fruitful in providing this exploration space to teachers.

Action research further helps teachers to develop their ability to theorize about their practice and think logically about what s/he is doing. This practice- theory link is the critical element in developing teachers as professionals and teachers own professional development (Batra, 2005). Teachers in South Asian countries have mostly been the subject of reforms and has been looked at from a deficit perspective (Sarangapani, 2021) who lack understanding of their own work. The AR approach to continuous professional development has the potential to shift our paradigm from a deficit perspective to an autonomous professional who is much more aware and conscious of their judgments and decision making in the classroom, with colleagues, and as an employee.

Mentoring of teachers is also a significant aspect of Action research, specifically in the low resource context of South Asian countries. Here in this scenario, we understand that teachers are underqualified, it can be the case teachers do not have practical knowledge of conducting research like in Nepal, teachers do understand AR theoretically but for the implementation in the practice they will require support and mentoring. Here it becomes very important to assign mentors who could empower teachers and enhance their autonomy by focusing on understanding teachers as agents of change (British Council, 2020). Understanding teachers here include understanding what they think and help them choose their pathways by reflecting on their practice. Role of the mentors would not be to judge or simply advise, rather it would be to support teachers to become autonomous professional beings (British Council, 2020).

*“Mentoring can be defined simply as sharing knowledge, skills and experience in order to encourage and empower another person. In contexts of teacher development, this process involves enhancing teachers’ autonomy to develop for themselves, increasing their ability and willingness to take control of their own learning rather than judging or directly advising them or telling them all the answers. In other words, mentoring for teacher development involves placing teachers at the center, viewing them as people who can reflect on and address issues for themselves, as ‘agents of change’ for the improvement of teaching and learning” (British council, 2020, P 14).*

## **Purpose of the Action Research Compendium**

The primary purpose of the compendium is to systematically present emerging insights and provide a deep dive into some of the reflections of the fellows based on the training programme and peer-to-peer interactions. This compendium also gives the fellows the opportunity to showcase the results of their reflective practice and research conducted based on 6 themes. The themes covered literacy and numeracy, science education and the use of Open Educational Resources (OER) in teaching and also emphasized on important aspects of education such as peace education, gender equality and social inclusion

## State of Action Research in each Country

Action Research is an important tool that helps teachers understand and learn more about their classroom context and practice, enrich their pedagogical repertoire and reflect on their teaching practices for improvement.

### Nepal

The National Education Policy in Nepal focuses on Action Research as a means to improve teachers' teaching-learning processes. It is a mandatory component of teachers' professional development programs for government school teachers in the system wherein, they are required to select an issue in their context and find local solutions to address the same. Conducting Action Research is also a key parameter for their promotion. The private school teachers do not have the opportunities for carrying out Action Research.

There is however, a gap in policy and practice. Teachers seldom continue the use of action research as an important tool to strengthen their classroom practice post the training, and tend to merely write up action research reports to qualify for promotion. Teachers are unaware of how Action Research can be used as a significant tool for their continuous professional development. Some of the challenges that prevent teachers from making it a part of their routine practices are: insufficient knowledge about action research, lack of a support system, inadequate resources for mentoring teachers, time constraints due to the pressure of completing the syllabus and fear of failure in trying out new approaches and low motivation/interest of teachers. Additionally, there are very few avenues for teacher educators to practice Action Research especially, in collaboration with teachers.

There is a need to support development of a research culture among teacher educators and teachers through opportunities to engage in field based action research, identifying challenges and finding contextualized solutions.

### Maldives

Until recent years, research culture was predominantly not a well established area in the Maldives. However, with the growing need and desire for professional development, more people have engaged in higher education whereby they need to engage in conducting research. Due to this increased number of students pursuing higher education, both at the undergraduate and postgraduate levels, the number of students doing research has immensely increased in the country. This includes Action research done by some student teachers as well. The trend of presenting at research conferences has been on the increase with a number of platforms where research can be presented and also partly due to the nature of some postgraduate programs which include presenting research at forums as mandatory. Sadly, only a few of these researches have been published due to various reasons.

A lot of research has also been done at the Teacher Educators' level and quite a number have been published. However, this includes limited Action Research done by Teacher Educators and more importantly less Action Research done in collaboration with teachers. The National Institute of Education made efforts to improve this and conducted workshops in which teachers were engaged in sessions on Action research and required to conduct Action Research at schools. Nevertheless, it was only a few of the participants who had completed their Action Research, mainly due to time limitations. Therefore, this suffices the reasons for working on building an action research culture in the Maldives.

## **Afghanistan**

Action research is another area that teachers, teacher educators, and Ministry of Education staff are not much familiar with. Despite its crucial link to TPD, action research is now missing from Afghanistan's teacher education practices. To improve the standard of teaching and learning, the integration of action research into the educational system must be strengthened. In Afghanistan, attention is being paid to action research as a way to tackle the unique difficulties the country's educational system faces. However, a number of issues, such as a lack of funding, a lack of knowledge and training among educators, and the requirement for institutional support and collaboration make it difficult to undertake action research. Action research is being promoted by organizations and institutions working in the education sector, with an emphasis on capacity building and offering training opportunities.

## **Action Research Process**

Action Research was an integral component of the SATE fellowship. The fellows were required to work collaboratively with 5-10 teachers and address local contextual educational issues. The fellows had the option of selecting one of the 6 themes for their action research study. The options were: language education, math education, science education, OER, peace education and gender equality and social inclusion.

During this process, they were mentored by a team of academic mentor from TISS /another academic institute in India and a field mentor that was from their own context.

The academic mentor provided technical pedagogical support while the field mentor provided guidance via contextualization of the intervention. They had need based meetings with their mentors over zoom platform. Other channels of communication used were whatsapp, email, telegram, phone, social messenger.

During the course of this 6 months' action research journey, their role transitioned from being a mentee to a mentor to the teachers that they were working with. The fellows conceptualized the problem that needs to be addressed, conducted TPD workshop sessions for the teachers, designed the intervention and related activities, supported the teachers in the implementation of the pedagogical strategy, engaged in reflective discussion sessions with the teachers and submitted the final report. Engagement with the teachers took place both in -person and online.

In addition to the above, a series of enrichment webinar sessions were curated to support the fellows with their action research. Some of the sessions were on concepts related to literature review, classroom observations, data collection, management and analysis, working with teachers, building rapport with teachers, inclusion etc. The project team also arranged a few reflection sessions which gave the fellows a space to reflect on the fellowship as well as their own practices.

## Roadmap of the Compendium

The Compendium is divided into 3 sections. The first section illustrates the objectives of the MATPD project and the status of action research in the three countries and why it is important to focus on action research in three countries.

The second section includes 6 subsections based on the themes that were focused in the Action Research. The themes are Gender Equality and Social Inclusion, Science Education, Language Education, Mathematics Education, Peace education, and the use of OER. The 45 fellows from the three countries worked on the action research in collaboration with the teachers. Each of the sections gives an overview of the particular theme and its importance in South Asia and explains why these themes need to be focused. This is followed by a summary of the action research conducted in a particular theme across the countries. The summary gives information about the number of fellows, teachers, students and different types of schools (government or private) and grades focused under the particular theme. The diversity of the low resource context is explained in different countries and context and the interventions designed to address the low resource contexts in the action research under a particular theme. The conceptual/pedagogical focus of the Action research in the theme is described to illustrate the diversity of approaches used under a particular theme. The consolidated findings related to a particular theme is presented while considering the diversity of contexts to identify what works in a particular context to address the particular challenges faced.

The third section of the compendium discusses the conclusions that can be drawn from the action research conducted across the themes for the three countries theme wise, countrywise, based on the types of schools in which they are conducted and grade wise. Implications for supporting collaborative action research in the three countries will be discussed and along with the suggestions for future research.

## SECTION II: Action Research Compendiums

A total of 42 action research was conducted across the three countries, over the selected six themes. Each country has based their action research on themes and topics more prominent and relevant to their contexts and therefore, each country does not have action research on all six themes.

### A total of 42 Action Researches



Theme	Afghanistan	Maldives	Nepal
<b>THEME 1</b> Gender equality and social inclusion	02 Action Researches 20 School Teachers 06 Schools	02 Action Researches 13 School Teachers 02 Schools	01 Action Research 05 School Teachers 02 Schools
<b>THEME 2</b> Open Educational Resources	N/A Action Research N/A School Teachers N/A Schools	02 Action Researches 10 School Teachers 05 Schools	03 Action Researches 17 School Teachers 10 Schools
<b>THEME 3</b> Math Education	03 Action Researches 25 School Teachers 11 Schools	N/A Action Research N/A School Teachers N/A Schools	03 Action Researches 16 School Teachers 12 Schools
<b>THEME 4</b> Peace Education	N/A Action Research N/A School Teachers N/A Schools	04 Action Researches 30 School Teachers 06 Schools	N/A Action Researches N/A School Teachers N/A Schools
<b>THEME 5</b> Science Education	03 Action Researches 27 School Teachers 08 Schools	01 Action Research 04 School Teachers 01 Schools	07 Action Researches 39 School Teachers 27 Schools
<b>THEME 6</b> Language Education	07 Action Researches 64 School Teachers 37 Schools	03 Action Researches 16 School Teachers 05 Schools	01 Action Research 25 School Teachers 25 Schools



## Theme 1: Gender Equality and Social Inclusion

### Introduction

The Asian Development Bank's *'Framework for Integrating Gender Equality and Social Inclusion in the Asia Development Bank's South Asia Operations'*<sup>1</sup> published in August 2023, identifies five significant barriers to equitable progress and access to opportunities in South Asia. These include gender inequality, social identity, economic inequality, and regional disparity. Each one of these barriers impact education in south Asian countries like Afghanistan, Maldives and Nepal, and determine the access to and quality of education available to children as a basic human right for all. As is very aptly described in a 2007 SWAPs case study<sup>2</sup> from Nepal, 'Multiple factors cause disparity and inequality in education. Therefore, the social inclusion challenge is vast and includes high levels of poverty, fragile environments, entrenched gender, and caste discrimination, and the existence of 'hidden' groups of particularly vulnerable children, including disabled children, working children, HIV affected children and those displaced by conflict. Adding to these, challenges include weak governance, incoherent policies, and weak coordination and collaboration within and between sectors.'

The essentially patriarchal culture shared by all South Asian countries, makes gender a determining factor, when access to education is concerned. Afghanistan was already struggling with reaching gender parity in education when the Taliban took over control of the country in August 2023. Thereafter, spaces for girls' education have been shrinking progressively, with girls no longer allowed to go to school beyond grade six, and only allowed to be taught by female teachers. While this issue is not as extreme in Nepal or Maldives, where girls and women have access to school and higher education, the underlying patriarchy ingrained in the culture, does pose challenges in the path of girls seeking education, and entrenched gender stereotypes and gender biases influence the choices and options available to girls versus boys.

Social differences such as linguistic, ethnic, and religion are also recognised to be barriers to equal access to education, particularly in the case of minority communities. Disabilities, both physical and mental, are also limiting factors for access to education, particularly in low resource settings, where necessary infrastructure, tools and trained staff are not available to accommodate the specific needs of the differently abled.

Disparity of wealth distribution can also be a factor determining whether or not children can access education, or the quality of education accessible to them.

Thus, a discussion and exploration of the problem of gender and social inclusion within the education sector can contribute findings that can inform important policy advocacy in the education sector in individual countries, and the region at large. Thus Gender and Social Inclusion in education was recognised as a critical theme to explore within the MATPD, through action research initiatives in the three countries.

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<sup>1</sup> <https://www.adb.org/sites/default/files/publication/900681/framework-integrating-gesi-adb-south-asia-operations.pdf>

<sup>2</sup> [https://www.academia.edu/7448139/SOCIAL\\_INCLUSION\\_GENDER\\_AND\\_EQUITY\\_IN\\_EDUCATION\\_SWAPS](https://www.academia.edu/7448139/SOCIAL_INCLUSION_GENDER_AND_EQUITY_IN_EDUCATION_SWAPS)

## Summary of Action Researches

Gender equity and social inclusion in education was an important subject of focus for the project. It explored the impact of education practices in the three countries, on students of different genders, and varying abilities, socio-economic backgrounds, and how teachers and institutions can adjust their practices to ensure equitable access, and quality education to all students. While a few research studies have been done in the three countries, there are none that involve teachers or use action research. Five Research Fellows (RF) including two each from Afghanistan and Maldives, and one from Nepal, conducted Action Research under the theme, Gender and Social Inclusion in Education (GESI), working with 38 teachers.

In Afghanistan the research involved 20 teachers from six government-run primary schools in two provinces, two of them urban, and the remaining rural schools. With the Taliban taking over control of the country in August 2021, girls' education remains severely curtailed, with girls only allowed to attend school up to grade 6, and any formal reference to gender issues is taboo. Consequently, the action research in Afghanistan under this theme focused primarily on challenges and issues of equitable and equal class participation in public sector primary schools.


Participating schools were short of basic learning and teaching tools and supplies such as textbooks, teaching aids, and even adequate classroom facilities. Inadequately qualified teachers lacked capacity to teach large and diverse groups of children. The action research in Afghanistan focused on issues of including all students of diverse learning abilities in classroom learning activities, to ensure equitable learning opportunities, through adoption of appropriate pedagogy and classroom management strategies. The primary issues teachers in Balkh and Paktika provinces faced were a combination of acutely low resources, large numbers of students, and lack of adequate professional development opportunities.

The intervention included consultations with teachers and students followed by professional development workshops to equip teachers with strategies and skills to enable inclusion and participation of all students in a class. Participant teachers participated actively in recognising the problems, and in learning class management and pedagogical strategies to ensure inclusion and engagement of all students in the class, and were made more aware of students with special needs. The students in the participating class groups also got the opportunity to be heard, and to share their problems in group interviews conducted by the researchers, and their learning experience improved over the course of the intervention.

In Nepal one research fellow worked with five pre-school teachers from a private sector urban pre-school, focusing on low participation of children in learning activities. All teachers at the participating pre-school were young, and were pursuing higher education or other professional objectives themselves, and were not trained or qualified to educate very young children.

While the pre-school was a private sector school with reasonable means, lack of appropriate resources and strategies to keep children engaged in learning was primarily owing to lack of awareness and understanding of the teachers themselves, in the use of child-centered classroom strategies to keep pre-school aged children engaged and involved in the learning process. The intervention involved training teachers in the use of two specific learning activities that increase student participation and attention in the classroom. Teachers were made aware of the special approach needed for early childhood education, and learned and practiced two specific classroom strategies to retain children's attention and interest in the class.





Two research fellows from Maldives also worked on the theme of gender and social inclusion, focusing on gender perceptions of teachers and how they impact students' mindsets. One research fellow worked with seven Math and Science teachers from a government secondary school, to raise their awareness about possible socially instilled gender biases that may be influencing their communication with boy and girl students, and potentially affecting girl students' perceptions of their academic and gender aspirations. Her intervention was a professional development session for sensitization of teachers about gendered communication with students. The participating teachers became more aware of their own language use, and the interference of their gender biases on the way they deal with male and female students, thus enabling them to communicate more responsibly and in an enabling and gender neutral tone with their students.

The second research fellow worked with six pre-school teachers in one urban government-run school, to challenge their gendered expectations from girl and boy students and to raise consciousness about how gender stereotypes may be unintentionally reinforced by teachers through choice of toys and play activities for girls and boys. The intervention included collaborative research, class observations, and awareness raising discussion sessions with teachers. By the end, teachers were conscious of the importance of gender neutral play activities for engendering gender equity and breaking stereotypes in early grade learning environments.

**Title:** Teaching practices in diverse classrooms

**Name:** Mohammad Ishaq Aryan

**Coverage:** The action research was conducted in four rural government primary schools in Orgun District of Paktia Province of Afghanistan. Ten teachers and 76 students from 10 primary-level classes (45 boy and 31 girls) aged 7-11 years, participated in the study.

**Problem statement and Significance of the study:** Teachers in the district are unable to provide all children equal opportunities to engage in classroom activities, keeping in mind their specific learning needs. This is especially important since schools in Orgun district are minimally resourced, and students lack even basic learning material such as textbooks. In this acutely low-resourced context, teachers lack pedagogical and professional knowledge, and the ability to ensure adequate learning opportunities for students in diverse classes. Typically, teachers only interact with the quick learners who sit in the front rows. Students in the back rows tend to be ignored in the classroom. Other groups that are at risk of being marginalized include girl students, who may be diffident, children with special learning needs, and students from financially disadvantaged families, who lack support and resources to get ahead in school.

**Research Questions:**

1. What teaching practices can benefit all children in a diverse class?
2. How do we improve classroom engagement of all children in a diversified class?

**Intervention:** The researcher collected qualitative data through direct interactions with students and individual participating teachers, as well as observation of the teaching and learning processes in 10 primary level classes in four minimally resourced government schools, where teachers taught without access to any supplementary teaching material, charts, computers or internet, and most students did not even have textbooks. Seven of 10 teachers did not possess a smartphone, which limited the possibility of sustained remote PD support. Based on the data collected, the researcher designed his intervention, which was a two-day interactive training workshop for participant teachers, to enhance their understanding of inclusiveness, diversity, and variety of effective teaching and learning techniques. Training topics included diversity and inclusion, collaborative learning strategies and benefits, classroom management, student behaviours, mentoring, Universal Design for Learning (UDL), processes of mentoring and use of Information, Communication and Technology (ICT) in learning.

**Findings:** Through post-intervention observations of the same teachers and students in their classes, the researcher found that the learning environment had improved. Teachers now involved all students, including those sitting in middle and back rows, and treated all students with respect. Most of the teachers, unlike in the pre-intervention observation, managed the classroom well in the second observation; they organized group activities, and gave students practical work according to the topics, provided clear lesson objectives, and positive reinforcement and feedback to students, and used a variety of assessment tools, and creative teaching methods. Most teachers checked the understanding of all the students, and could identify and involve shy students in the lesson. Moreover, nearly all the teachers treated all students without discrimination, shared the learning resources with all the students, spoke clearly, audibly and confidently. All teachers were able to get students' attention, and organized the class to be safe and respectful of all cultures and backgrounds; girls and boys were given equal opportunities in the class, and all students were engaged in level appropriate activities in the class. A number of teachers tried to adapt content to the needs and context of students.

The research fellow also emerged from the experience with new knowledge, and an appreciation of the value of knowing the perspectives of both teachers and students, about the problem identified, so that solutions that benefit all parties can be found, within the limitations of the given context.

However, given the short time frame of the overall engagement, some weaknesses were still observable. For example, four of 10 teachers still encountered issues in implementing cooperative learning, and in the appropriate use of accessible learning materials in their classes, and all 10 teachers still found it difficult to use peer tutoring for learning in class, and relied more on lecture. There is a need for sustained mentoring and regular follow-up and periodic professional development activities for teachers to internalize the new strategies and techniques, and to use them routinely.

**Implications:** The action research highlighted the endemic tendency of school teachers in Afghanistan, to focus on a small group of students at the cost of opportunities and time that should be equitably spread across all students in a group irrespective of ability or social standing. By listening to students' and teachers' perspectives and challenges, it is possible to find viable and acceptable solutions to problems even in a context where there are limited learning and teaching resources. It also reinforced the need for continuous professional development support to teachers in provinces like Paktika, where government run schools are acutely under-resourced, and teachers typically under-qualified or unqualified to teach young students. While the intervention had some positive outcomes, it was clear that long-term consistent support was needed to enable teachers to deliver inclusive and quality teaching and learning opportunities to all students

**Title:** Social Inclusion and Gender: Problems Limiting Class Participation in Primary Schools for Girls in Balkh, and its Impact on Learning Outcomes.

**Name:** Zarghona Rezayee

**Coverage:** The action research was conducted in two urban girls' elementary schools in Balkh Province-Mazar-e-Sharif city, involved 10 female teachers, and 250 girl students aged 9-11 years, in the fourth grade.

**Problem statement and Significance of the study:** Inclusion of students is not a priority issue for a vast number of school administrations, and teachers don't pay enough attention to the passive students in class. This is because they have few opportunities for professional development, and schools lack basic support such as teachers' guides to help teachers teach different subjects effectively. Consequently, teachers are not sufficiently aware about the importance of students' participation in school, especially at primary level. With 30-35 students in a class crowded into small rooms in rented buildings, teachers generally only focus on students in the front of the class, and fail to include and encourage students in the back rows to participate in learning activities. This results in a majority of neglected students losing interest, and being discouraged, and staying silent, and a considerable number of students remain passive members of the classroom, and as a result do not capitalize on the benefits of participation. The study aimed to identify and address factors affecting class participation of primary school girl students.

**Research Questions:**

1. Why do some girl students not participate in class in primary school grades?
2. How does class participation affect learning outcomes?

**Intervention:** The researcher used a combination of data collection activities such as class observations, and direct interactions with teachers through formal interviews and feedback sessions, and Focus Group Discussion (FDGs) with groups of students, to collect data about perceptions and causes of the problem of low participation by some girl students. Evidence of the impact of non-participation was collected by administering a quick class quiz for all participating students.

The action research was an important exercise for both teachers and the research fellow, in evidence-based problem identification and solution for improving learning outcomes of students. Based on the findings, the researcher organised a professional development and debriefing workshop attended for 10 participant teachers, as well as an additional 10 teachers from grades one, two, and five (who benefitted from the learning activity). The researcher used the 2-day workshop for information and awareness sharing about the importance of inclusiveness in the classroom, and its effects on learning outcomes, and shared the findings of her research. She supported attending teachers to collaboratively come up with contextually relevant and practical strategies they could practically apply in their classrooms, to enable more active participation and better learning outcomes for students.

**Key findings:** The participatory nature of the 2-day professional development workshop allowed teachers to take charge of the change in their teaching and learning practices, promoting ownership and acceptance. During the two-day workshop, teachers used the researcher's findings to come up with contextually relevant and practical solutions to student and teacher problems, giving them due credit for their understanding of the specific learning environment in which they work. Strategies chosen by the workshop participants included planning group work and practical projects with students for deeper understanding of new lessons; using activities like do and show, snowballing, gallery; improving teacher interactions with all students; organizing remedial classes for slower

students during school holidays; and collaborating and consulting with peers (other teachers) more regularly and frequently to share experiences and problems, through formal meetings and creating WhatsApp groups. Because these were solutions considered viable by the teachers themselves, it is more likely they would try to practice them.

A post-intervention round of class observations was planned to measure the change in the practices of the teachers and its impact on students' learning, but the post-intervention observations were not possible because schools had final exams followed by three months of winter holidays.

The research fellow herself understood the importance of involving the teachers themselves in understanding the problems identified during the research, and in coming up with solutions that are realistic in their specific contexts. This allowed teachers to feel empowered because they were more familiar with the realities of their environment, and encouraged ownership and acceptance of the changes they proposed.

**Implications:** The research fellow used credible research data to demonstrate to teachers the impact class participation has on learning outcomes and demonstrated how working collaboratively with teachers find solutions to problems and initiate reform, promotes ownership of new practices and approaches. As in the previous research, the short time frame of the intervention, while useful, was not optimally impactful, and indicated the need for much longer term interventions in collaborative mentor-mentee relationships, for there to be long term and sustainable change in teaching and learning.

**Title:** Implementing Classroom engagement Strategies for Inclusive Learning

**Name:** Dolma Lama

**Coverage:** The action research was conducted with five teachers in a pre-school located in Lalitpur District of Nepal.

**Problem statement and Significance of the study:** The problem addressed by the researcher's intervention is described as the generally didactic, teacher-centered approach to classroom learning and teaching in Nepal, which does not take into account the diversity of learning abilities and needs of students. As a result, students tend to be bored and disengaged in the classroom, and teachers focus primarily on delivery of content, under pressure to complete courses, instead of involving and including students actively in the learning process. The study is important because the same practices also affect early childhood and pre-school education, which caters to children aged 18 months to six years. At this early stage of development, pre-schools in Nepal, concentrate on academic achievement rather than on holistic development of the child's social and other basic skills; younger children with short attention spans struggle to stay attentive and learn. The intervention focuses on two class activities that aim to include and engage all children in the learning process and to retain their attention in the class.

**Research Question:**

1. How can teachers use different classroom strategies for improving an engaged and inclusive learning environment?

**Intervention:** The intervention was implemented in one pre-school in Lalitpur district, with five preschool teachers, and children ranging in ages from 2 to 6 years. It consisted of two cycles of professional development workshops for the five pre-school teachers, which trained them in the use of two specific child-centered learning strategies, i.e. attention grabbers, and peer learning activities. Following each professional development workshop, participant teachers implemented the strategies in their classrooms, and the researcher observed their effectiveness.

**Key findings:** Preliminary discussions and enquiry with teachers and pre-school management revealed that the participant teachers were not trained early childhood educators, and were pursuing other areas of higher education beside teaching preschoolers. Consequently, they struggled with holding the attention of such young children, and over-emphasized discipline while delivering instructional content, expecting the students to learn by repetition, imitation and memorization. Their primary concern was completion of the prescribed courses, without necessarily considering age-specific psychological and cognitive capabilities. Post intervention, the teachers and researcher found that with adequate preparation, teachers successfully used various attention grabbing activities to counter distraction and boredom among students, so that they were able to complete their course targets, while simultaneously preventing behavioural problems, or emotional meltdowns among children.

The researcher and teachers also found that counter to expectation, even very young children were able to engage in structured and properly planned peer learning activities. As a result, the teachers not only succeeded in completing their course targets in a timely manner, but peer learning also promoted a sense of community among children, strengthening their communication and collaboration skills, while ensuring that all children were included in the learning activities, and no student was left out.

The research fellow gained valuable insights into the status of pre-school education, even in some private sector schools, where teachers are not qualified to work with very young children, and are thus not effective, even if material resources are available. The fellow realized that continuous on job support for pre-school teachers was necessary, to ensure children are exposed to age appropriate learning opportunities that prepare them for formal schooling.

**Implications:** The action research in Nepal brought to light the struggle of early childhood educators, to keep children involved and interested in learning activities. By introducing untrained pre-school teachers to interactive activities such as attention grabbers and peer learning, the research fellow was able to make them understand how very young children can learn and remain attentive through engaging in fun activities. The research also found that very young children were expected to master subject learning rather than cognitive and motor skills, and identified the critical training gap among teachers at preschool level most of whom had no professional capacity to teach preschool-aged children. In this scenario, consistent and ongoing on-job mentoring or training support is vital to enable preschool teachers to adopt age-appropriate strategies to engage children, so that they can accomplish expected teaching and learning goals.

**Title:** Unconscious bias in the classrooms: Opportunities and barriers

**Name:** Asiyath Mohamed Didi

**Coverage:** The action research was conducted with seven teachers of Math and Science, with minimum five years of teaching experience, in one secondary school in Maldives.

**Problem statement and Significance of the study:** Despite fair and inclusive education policies in the country, which ensure equal education opportunities for all in Maldives, irrespective of differences in ability, and social or economic standing, students at all levels of school and higher education, continue to face conscious or unconscious biases often based on implicit beliefs and mindsets among both teachers and students. The action research addresses the gender discrimination that affects students owing to implicit social perceptions and stereotypes about gender, assigning specific abilities and roles to women and men. While most often this kind of discrimination is unconscious, with the teacher or student in question not intending harm, it compromises inclusiveness, and has far-reaching social impacts, limiting opportunities for girls and women, particularly in the fields of Math and Science, and becoming barriers for women and girls from aspiring to leadership positions, professionally.


**Research Questions:**

1. What kind of unconscious bias is there among teachers?
2. How can teachers' understanding of unconscious bias help to overcome implicit thinking among students?
3. What are some strategies, which can be used to minimize implicit thinking which leads to unconscious bias?

**Intervention:** The intervention was implemented in three cycles; the first cycle was an online questionnaire to gauge teachers' understanding of unconscious bias in classrooms and also to understand the status of the issue among teachers and students. Second phase was to conduct professional development sessions to sensitize teachers, and provide more information about implicit thinking and unconscious bias. Third phase of the study was another online questionnaire to measure the improvement in awareness and attitude of participating teachers, post training, and also to understand the kind of professional development that helps teachers to eliminate or minimize implicit behaviour leading to gender biased interactions with students.

**Key findings:** The research revealed that most teachers were unaware of any sort of implicit attitudes and bias in their interactions with students. However, when presented with common classroom and social scenarios, they realized that they are indeed, sometimes, unintentionally engaging in gender biased communication, thus reinforcing gender stereotypes, and suggesting limitations in the potential and capabilities of girl students as compared with their male classmates, based on assumptions like boys are naturally stronger at Math and Science. This perpetuates conventional perceptions of gender roles, and justifies the relegation of girls and women to subsidiary roles in society and limiting their professional possibilities to traditionally women-appropriate fields such as nursing and teaching. Participating teachers were sensitized to the importance of mindful communication with students, which does not subscribe to conventional biases, and encourages girls and boys equally to aspire for their goals with confidence. All participating teachers understood that when teachers are aware of unconscious bias and when they deliberately stop doing it, discrimination between girls and boys can be minimized in the classrooms. They also highlighted three essential conditions needed to make this change. They are: 1) awareness of parents, 2) awareness of teachers and 3) awareness among students.





By the end of the intervention, a small cohort of selected teachers from one school had improved understanding about implicit behaviours related to gender biases, and realized the need to correct implicit behaviours and attitudes. The researcher also understood that there was a need to widen the scope of future similar initiatives, so that more teachers and educators in the country could be reached and educated about biases and implicit behaviour that may unintentionally, harm students.

**Implications:** The action research made secondary school level Science and Math teachers aware of their own implicit gender mindsets, and how communication coloured by their own gender perceptions of male and female roles and abilities, may be, unconsciously, reinforcing gender specific roles and choices for boy and girls students. Some such beliefs such as boys having more aptitude and talent in Science and Math, and girls in humanities and creative subjects may limit their performance and future career choices.

**Title:** Challenging Pre-school Teachers Gendered Expectations Through Conscientisation

**Name:** Fazeela Ibrahim

**Coverage:** The study was conducted with six pre-school teachers in one public school of Male' City.

**Problem statement and Significance of the study:** It is important to understand the impact of pre-school educators on perpetuating gender stereotypes in a child's formative age, and the potential influence of personal biases on their pedagogical choices. From infancy, individuals are socialized to conform to and comply with cultural norms and expectations, including gender roles and societal conventions, while also internalizing the beliefs they encounter. Gender socialization has long-lasting consequences. It is important that teachers responsible for early childhood education are aware of the impacts of gender socialization on the overall development of children, and the role of teachers in the gender development of young children, through challenging gender stereotypes in the classroom.

The study's results can benefit teachers and parents, who care for young children, so they can consciously eliminate negative gender biased behaviours in their interactions with children. They are also important for education policymakers and administrators for shaping policies and developing early childhood education curriculum, to mitigate gender stereotypes and foster fair and equitable gender perceptions. NGOs can utilize the study's results to design TPD material and initiatives to combat detrimental gender stereotypes and advance gender parity in early childhood education.

**Research Objectives:**

1. To recognize gender roles and stereotypical biases among teachers and observe for gender-stereotyped actions in classes.
2. To challenge the stereotyped patterns of behaviour observed in the classes.

**Intervention:** The intervention was a collaborative study, involving professional development sessions for 'conscientisation' and awareness of teachers regarding gender biases and stereotypes, class observations to identify gender biased actions, and a series of reflective discussions between the research fellow and participant teachers, to identify and agree on classroom behaviors and practices that challenge prevalent gender stereotypes, and prevent perpetuation of negative gender norms. It was conducted in two cycles, each involving planning, action, observation, and reflection. The entire process was participatory, with teachers contributing to the research design and plan, to ensure it was relevant and responsive to their context. A baseline survey established the background of participant teachers, and their understanding, beliefs, and attitudes about gender and gender roles.

**Key findings:** Participant teachers professed a desire to make a positive impact on the lives of young children. Introspection and reflection by study participants revealed that their own lived experience at home in their growing up years, gender roles modeled by parents and grownups around them, and the gendered expectations from them and their male siblings, may have affected their attitudes towards gender. Findings under the three main themes were as follows:

*Awareness of gender roles and stereotypes:* Most teachers believed both men and women were equally responsible and capable; however, acknowledged that tasks at home predominantly attributed to men were related to household maintenance and resolving internet and IT issues etc, while preparing meals and caring for children were perceived as women's responsibility. Similarly, regarding academic disciplines suitable for boys and girls, subjects such as fashion, were considered

more fitting for girls, while metal and woodwork, more appropriate for boys. Occupations of hairdresser, nurse, and social worker were deemed best for women, while builder, armed forces personnel, and engineer were more appropriate for men.

*Gender-stereotyped actions in class:* Classroom observations of toy and play preferences of students revealed that the highest preferences of girls were baby dolls and kitchenware; boys chose building blocks and vehicles, though all children played with all toys, to different degrees. Girls also liked the color pink, and boys blue. Playtime activities that girls preferred were swings and slides, motor games, chatting, and sand games; boys chose motor games, ball games, running, sand games, and climbing. Empathy and caring were attributes observed more among girls, though cooperation and helpfulness depended more on upbringing.

*Practices to challenge gender stereotypes:* Teachers found that perceptions of gender roles depended significantly on the child's family orientation and actual role models, particularly parents, had an important hand in instilling specific gender expectations in children. Television and media was also an influence on gender perceptions of children. At school level, possible strategies to challenge gender stereotypes included making all toys accessible to all children irrespective of gender; including both boys and girls in similar play activities; and involving teachers in professional development sessions on managing gender-biased actions in class.

**Implications:** The research fellow and the teachers involved were sensitized to the inadvertent and mostly unconscious practices and behaviours of teachers and children that may be reinforcing conventional gender stereotypes, and influencing the mindsets of children at such a formative stage in their lives. Research fellow and teachers learned about the importance of actively enabling children to challenge such stereotypes, for gender perceptions of future generations to change for the better.

## **Theme 2: Open Educational Resources**

### **Introduction**

Education in the Global South faces a myriad of interrelated challenges. These include: unequal access to education; variation in quality of resources, teaching and student learning outcomes; and increasing cost and concern about sustainability of education. The adoption of OER is seen as a response to these unprecedented challenges.

OER is an umbrella term to refer to all educational resources, digital or and non-digital, which are available for use by anyone and for all, on the principles of 'openness', 'inclusion' and 'enrichment'. Digital technologies are enabling new forms of resources such as multimedia, digital interactives, simulations, immersive and adaptive environments and games to be developed and offered for integration into education on an unprecedented scale (UNESCO-MGIEP, 2019).

Digital resources offer unique pedagogical affordances that can be leveraged to make learning and teaching more engaging and authentic, enhancing the overall quality of education. For instance, it is available anytime and anywhere and offers: multiple presentation of concepts; Communication and collaboration; Active knowledge making through interactivity; Immediate and just-in-time feedback; Variations, differentiations and diverse practices; Self instructional and self-paced multimedia resources for learning; and accessibility and support for disabilities. Furthermore, it is adaptable to contextualize and translate in various languages and is generative, diagnostic and has personalisation capabilities.

Educationists across the globe are developing a vast pool of educational resources on the internet that are open and free for all to use. However, they are not fully leveraged to make provision for quality education. The capacity of educators to effectively use OER requires significant professional development with regards to both the use of ICT and multimedia applications and new pedagogy of effective online instructional design.

### **Summary of Action Researches**

The OER theme discusses five Action Researches done across Nepal and Maldives. The five fellows worked with a total of 27 teachers and 15 schools (govt and private). Four fellows took up science while one social sciences. In Nepal, the 3 fellows worked with 17 teachers in seven private and three government schools. These were predominantly urban areas with only one school in a rural area. In the case of Maldives, the remaining two fellows worked with 10 teachers across five government schools in outer islands. OER was not taken up as a theme for Action Research by the Afghanistan fellows. It is important to note that out of five fellows, three worked with OER while the remaining two fellows focused on Project Based Learning (PBL)

In terms of issues, they were identified in two areas. Teaching and Learning, and professional development for teachers. Teaching is mostly lecture based and content heavy with very less practicals and focused on rote memorization, thus leading to student disinterest in the subject and limited conceptual understanding of the subject. Teachers do not engage much in using digital resources for teaching and are required to use projects as per syllabus mandated. However, due to the pressure of completing the syllabus, they are unable to use PBL effectively due to time issues. There is low interest and incentive for teachers to integrate ICT for teaching-learning and teachers are encouraged to use OER but teachers rarely use them. In Nepal, teachers do not have

the knowledge of OER, while in Maldives, teachers do have some knowledge of OER. In both countries, there is a lack of teacher training in ICT, simulations and how to use them constructively and inadequate training of teachers in the subject astronomy.

The low resource contexts are different in the 2 countries. In Nepal, there is a lack of adequate computer labs, high cost of internet, lack of proper lab facilities in many schools, materials and equipment are costly to purchase, and lacks quality teaching resources in astronomy. On the other hand in Maldives, there is access to tablets to students (not all tablets were functional in one school) and schools have smart TVs, and some schools did not have required materials to carry out certain experiments.

To address the issues of conventional teaching approaches, low levels of student engagement and the low resource context, 3 fellows integrated OER in their science teaching eg. Physics Education Technology (PhET) simulation, Online Labs (OLabs). The remaining 2 fellows focused on PBL. While one adopted using digital resources like YouTube videos for projects, the other adopted the Gold Standard PBL to make PBL more effective and authentic along with use of ICT tools.

The findings of the Action Research suggest that use of these student centered pedagogical practices led to: increased student interest and engagement in the subject; helps students understand and visualize the concepts more comprehensively; students were curious to learn; students become self-motivated in engaged in the learning process; positive impact in students' skills of communication, creativity and collaboration. Additionally, there is an increase in teachers' awareness and use of OER, confidence in using PBL, and improvement in teachers' professional capabilities. Lastly, both teachers and students explored new ICT tools like video presentation, digital posters, google slides, google search, and kahoot.

**Title:** Introducing Astronomy to Grade XI students using Open Educational Resources

**Name:** Ekta Vyas

**Coverage:** Ekta conducted her action research in a private school in Kathmandu with grade 11 science teachers and students.

**Problem Statement and Significance of the study:** The subject of astronomy is a recent addition to Nepal's high school curriculum. However, its teaching and outcomes are ineffective due to several reasons such as: Inadequate training of teachers on the subject and its integration with other interdisciplinary subjects within Science; Participating teachers are not aware about OER and its application for teaching-learning; Lack of quality teaching resources in astronomy; and the textbook does not offer very concrete and appropriate astronomy examples associated with different topic. The teachers and students, therefore, have a limited conceptual understanding of astronomy and low interest in learning about it.

OER can play an important role in making the study of astronomy interesting, interlinking interdisciplinary topics and creating an environment of activity learning for both teachers and students through increased engagement and participation.

**Research Questions:**

1. What are the outcomes of using OER in teaching/learning astronomy?
2. What changes are observed in the pedagogical practices of instructors who helped facilitate astronomy lessons using OER?

**Intervention:** Ekta conducted professional development workshop sessions for the teachers to orient them on astronomy and OER and share relevant resources with them. These sessions were primarily in person. For teachers, who couldn't make it, these were carried out online.

In the first cycle, the participating teachers prepared and implemented a lesson plan on an Astronomy related topic. The teachers had chosen topics in lieu with what they were teaching at the time of the intervention. In the second cycle, the teachers provided the links to the OER and gave the students the task to prepare the presentation on the topic collaboratively.

**Key findings:** The fellow had prior experience of conducting research but not Action Research. She mentioned that one of her learnings has been to arrive at the problem statement based on collaborative discussions with the teachers rather than picking any ad hoc issue and working on it. She also stated the need for reflection to make required changes for teaching-learning more effective and contextualized. She mentioned that several changes had to be incorporated in her Action Research based on teacher feedback to make implementation effective. Additionally, through this experience Ekta also enhanced her skills to develop formal lesson plans and research writing skills.

Based on teacher interviews and students' pre-post survey, there has been a positive change in both teachers and students viz a viz use of open educational resources for teaching astronomy. The percentage of students showing interest in learning Astronomy increased from 15 % to 65 % when OER links and guidance was provided. There has been remarkable progress in students' performance in the pre-post test when the teacher facilitated teaching using OER. Teachers' perception and use of OER has increased.

**Implications:** This implies that using OER can have a positive impact on teaching as it has enhanced the teaching-learning practices of teachers apart from the increase in students' motivation in learning the topic. Therefore, it is important to use OER in teaching content subjects in order to teach more effectively.

**Title:** Technology-enabled teaching and student engagement in teaching biology at Key Stage 4

**Name:** Fathimath Humam

**Coverage:** Fathimath conducted Action Research in 4 government schools in remote islands namely: HDh. Kulhudhufushi, L. Gan, R. Hulhudhuffaaruu and N. Holhudhoo with Key Stage four biology teachers (5) and students.

**Problem Statement and Significance of the study:** Interestingly, the classrooms are well-equipped with resources for teaching-learning. Classrooms have smart TVs to display virtual labs. The students have been provided with tablets. There is however a gap between policy and practice when it comes to integrating ICT for constructive and meaningful teaching-learning. Teaching, even at the secondary level is very teacher centric, content driven and focused on rote memorization. Despite the policy (National Curriculum Framework) recognizing and highlighting the importance of integrating ICT for teaching and the availability of resources, no effort is made to change the teaching practices. ICT is only used to present content and save time to complete the syllabus and teachers rarely use OER in teaching. The study can contribute to the literature on the use of ICT for teaching biology effectively and help fill the gap in the existing knowledge. There is a lack of research in this area in Maldives.

The study can also help develop and design TPD programs for pre-service and in-service on effective use of ICT resources in the teaching practice. The Technological Pedagogical Content Knowledge (TPACK) framework has been used in professional development programs to help teachers integrate technology in teaching effectively. Additionally, the use of ICT in teaching can provide different ways for students to access and understand the material, aligning with the 8-Affordances Framework.

It is a low resource context in some of the remote islands with respect to ICT facilities like smart TVs, interactive white boards. While the schools have the facilities, the teachers lack knowledge on how to use them effectively. Some of the schools did not have the specific materials/chemicals and equipment to conduct certain experiments in a physical laboratory set up.

#### **Research Questions:**

1. What ICT applications and resources are relevant in teaching biology?
2. What kind of activities do biology teachers plan to engage students in using ICT tools?
3. How do students engage in the classroom when technology is used in teaching?

**Intervention:** Fathimath Humam conducted 3 TPD sessions for the 5 teachers using Google Meet as the teachers were from different remote islands. She discussed OER and how these can be used effectively within the classroom, use of ICT tools and platforms for increasing student engagement. Teachers were introduced to virtual labs and were briefed on how to set up and access them, as well as how to incorporate them into lesson plans. Introduced them to the concept of UDL on how they could ensure inclusive classrooms. During the first cycle of implementation, the topic chosen for intervention was 'Classes of Food'. Students used the tablets provided by the government to do experiments (Food Testing) from OER (Olab). Based on reflection of the first cycle implementation, in the second cycle hands-on experiments were done in addition to using OER from tablets. The topic covered in the second cycle was photosynthesis; Factors affecting rate of photosynthesis.

**Key Findings:** The findings are categorized into three focus persons. Fellows, students and teachers. Engagement in practice based Action Research has helped fellow Fathimath to improve her own teaching practice by showing the potential of virtual labs in teaching laboratory investigations. She also mentioned that professional development of teachers was new to her and that the experience of doing Action Research gave her the opportunity to work towards their capacity development as a mentor by supporting them on various aspects including classroom implementation.

In terms of findings related to students, integration of ICT into the subject, increased students' interest in learning biology as they were able to visualize and understand concepts more comprehensively. Students are able to better engage with the learning process and become more self-motivated and curious. While watching experiments or simulations are helpful, students will remember for a longer time if they do the experiments on their own. Lastly, the teachers were pleased to discover OLAB because sometimes, due to limited resources in the school and a lack of time, they couldn't carry out certain experiments. OLAB helped address that gap and students were able to observe the changes in a limited time.

**Implications:** The Action Research study has implications for various stakeholders: teachers, schools, administrators, principals and policymakers. For teachers, integration of ICT can increase students' interest in the subject as well as improve student engagement and participation in the class; For students it is important that schools have access to various ICT tools. In addition, it is imperative that teachers receive professional development on how to constructively integrate technology with content and pedagogy to make teaching relevant and meaningful; For administrators and principals the findings suggest that investment in ICT resources and providing professional development programs for teachers can enhance student learning and engagement in biology; For policymakers, the Policies should support provision of ICT resources in schools and the integration of the TPACK framework in professional development programs.



**Title:** The Effect of ICT Assisted Project Based Learning Approach on Teachers Belief, Values and Practice in Key Stage 2 (Grade 4,5 and 6)

**Name:** Mohamed Fayaz

**Coverage:** Mohamed Fayaz conducted his action research in a government school in Maldives with Key Stage 2 teachers (grade 4, 5, 6) that taught different subjects in Raa Atoll, Maldives.

**Problem Statement and Significance of the study:** In a resource-constrained educational environment, the underutilization of tablets for collaborative student activities and advanced cognitive functions, such as authentic data analysis, is observed in this school and similar public institutions. Despite the prevalent adoption of PBL as a pedagogical approach, a comprehensive understanding of how teachers execute PBL and its alignment with meaningful learning outcomes is imperative.

All classrooms have smart TVs, and students have tablets. All teachers and students do use ICT to some extent. All the teachers are Google certified educators. PBL is a dominant form of teaching methodology that is practiced in this school. However, ICT is used by teachers only in the last phase of PBL-i.e when the project has to be presented. In terms of low resource settings, though students have tablets, some of the tablets do not function well. Internet speed was also an issue.

This study's significance lies in its endeavor to document the prevailing PBL implementation in the context of limited resources and subsequently augment it by enhancing teachers' capacity through ICT integration. By addressing these educational challenges, this research seeks to promote interactive and profound learning experiences, thereby elevating the educational standards in low-resource settings.

**Research Questions:**

1. What is the nature of PBL used by the teachers?
2. What is the scope of technology in implementing PBL?
3. What are the teachers' beliefs, attitude, and practice in integrating the ICT meaningfully in implementing the PBL in the classroom?

**Intervention:** A session on PBL was conducted with the teachers on how effective PBL is done. The teachers were required to create lesson plans incorporating PBL. In the intervention phase of this Action Research, Google tools and tablets were employed as ICT tools. During the second cycle, adjustments were implemented, including a recommendation to foster increased student collaboration. Furthermore, students were encouraged to explore and utilize a broader range of tools, applications, and software to enhance their learning experiences.

**Key Findings:** The main findings are observations from students and school teachers. The integration of PBL with ICT was found to have a positive impact on students' development. Students exhibited improved abilities in communication, problem-solving, life skills, and technology utilization. One of the noteworthy findings was that students' motivation, engagement, and interest levels experienced a noticeable increase as a direct consequence of employing PBL with ICT. This suggests that the combination of these pedagogical approaches not only enhances academic outcomes but also sparks students' enthusiasm for learning.

The study showed that ICT-assisted PBL positively influenced teachers' perceptions and attitudes towards ICT. This, in turn, led to a notable rise in the expected levels of ICT integration among primary teachers. The process of reflection on the processes, discussions, and mentoring helped improve the teaching-learning process. The teachers were able to sustain students' inquiry throughout the subject as there was an improvement in asking/driving questions. Additionally, teachers dealt better with time and pressure. Teachers stated that the use of ICT can further be strengthened by the usage of more free tools and applications. It was found that teachers and students both explored new ICT tools and applications. Eg. video presentation, digital posters, google slides, google search, kahoot, and the like.

**Implications:** The Action Research Study revealed that PBL integrated with ICT is an effective teaching pedagogy which helps the students to practice and inculcate 21st century skills as well as learn new tools and applications. Additionally, there is a need for modifications in the way teachers use the PBI approach eg. making teaching more effective and relevant for the students using more real life examples that are localized and contextual, strengthening the process of reflection. There is thus a need for providing further training to teachers on carrying out PBL through integration of ICT.

**Title:** Teaching Science in grade 9 using Physics Education Technology Simulation

**Name:** Prem Raj Joshi

**Coverage:** Prem Raj conducted his action research with 4 private and 1 government school in Dhangadhi Kailali district of Nepal. His study included working with 5 grade nine teachers.

**Problem Statement and Significance of the study:** Teaching science in Nepal is predominantly lecture based, focused on theory, content and rote memorization and less on practicals which leads to lack of visualization of the concepts and reduced creativity further leading to student disengagement in the subject. Another concern is that teachers do not have knowledge of OER such as simulations etc. and ICT tools and how these can be used effectively to teach science concepts. Though some of the schools have ICT labs, teachers are not trained and therefore, unable to use ICT resources. Teachers however, know how to use powerpoint and YouTube videos. There is a common belief that ICT is useful only for the computer teachers. Additionally, while teachers know their content well, they are not familiar and well-versed with learning theories and how these are important for meaningful teaching -learning.

Some schools are low in resources. For instance, lack of teacher training on ICT, simulations, learning theories etc. While computer labs are there in some of the schools, not all computers have access to the internet and the computer systems require maintenance. Moreover, the size of the lab is not big enough to accommodate all students at a time. Many schools lack laboratory facilities and the apparatuses for conducting experiments are costly.

Therefore, the study is useful for teachers and teacher educators working in the Science domain. They will become aware about different approaches to teaching science using digital tools, PhET simulations etc. Other teachers would also get motivated seeing them. This study will also explore how constructivism and collaborative approach of teaching can be useful in meaningful teaching learning of science. The study will improve both student learning and student motivation/engagement.

**Research Questions:**

1. How do science teachers improve their pedagogical practices by integrating PhET simulation in the classroom?
2. How does PhET simulation help grade nine students for meaningful learning of science

**Intervention:** Prem Raj conducted three TPD sessions with the teachers to orient them about AR, MATPD Project and most importantly PhET simulation and its various features. Lesson plans were designed collaboratively with the teachers. The action research was conducted in 2 cycles. For cycle one, the topic of Electricity and Magnetism was chosen. After the basic concepts were taught using the textbook, a virtual demonstration was done using a projector to teach Ohm's Law.

For cycle two, the topic of Chemical Reactions was chosen. Based on reflection and discussion with the teachers and mentors, it was decided that it's important to provide students with hands-on experience so that they take ownership of their own learning. Hence, post teaching the concept to the students, they were divided into groups of 3-4 students to use the simulation to balance the equations. The teacher would facilitate the session and address student queries/questions. The students would work collaboratively and arrive at solutions.

**Key Findings:** The engagement in the Action Research study provided the fellow with an opportunity

to work collaboratively with teachers. It helped him to understand their strengths and challenges in teaching science in their contexts and address the same. This practice based activity helped to develop his skills as a researcher, addressing local contextual problems and mentoring of teachers within a school set up. Additionally, it helped enhance his communication, collaboration and writing skills.

Prem Raj also mentioned that he was unaware about PhET simulation prior to the fellowship and that his experience of using this student centric pedagogical approach helped him realize that it could be used as an effective tool to teach the subject.

It was also found that there was high engagement of students in the learning process. Class observations indicated that students were engaged in learning when taught science using PhET simulation. Teachers mentioned that student collaboration enhanced during the PhET simulation. There was collaboration amongst students while using PhET simulation for balancing chemical equations. The students were discussing the process and answers amongst themselves. Notably, Some of the weak students were performing better when they used PhET. eg. (one of the weak students performed brilliantly at balancing chemical equations using PhET). Overall, the conceptual understanding of students has improved. During the FDG, students mentioned that they enjoyed PhET simulation classes and that they should be held twice a week. The students are now able to construct the knowledge on their own, as the scaffolding is embedded in PhET. Hence, teachers need to provide guidance and support whenever students are stuck and some of the teachers mentioned that they plan to use PhET simulation for their other classes.

**Implications:** The Action Research study is useful to teachers and teacher educators who are in the field of science teaching. PhET simulation will enable them to understand and engage in a new alternative student centered pedagogy that will contribute to effective classroom instruction and practice as well as address issues of student disengagement and low participation in the class.

The research will also be beneficial to the policy makers as student engagement and participation has been one of their focus areas. They will be able to understand how PhET will not only improve professional development of teachers but also enhance student learning and engagement with the subject. In future, research can also be taken up to explore other simulation tools like OLabs, clx resources to make science teaching more meaningful, relevant and impactful.

**Title:** Use of Project Based Learning Approach in Social Studies of Grade 9 in Nepal

**Name:** Puja Shrestha

**Coverage:** Puja conducted her action research with 2 government and 2 private schools in Kathmandu. Her study included working with 5 grade nine teachers.

**Problem Statement and Significance of the study:** Teachers believe and follow the traditional way of teaching and don't engage much in using digital resources for classroom teaching.

They are also not much aware about PBL and how the approach can improve teaching practices and student learning. As per the Nepal Govt syllabus, 8 different types of projects are supposed to be integrated into classroom teaching, however due to time constraints, pressure of completing the syllabus and lack of awareness they do not carry out projects with students.

The study will help bring about a transformative change in the educational sector in Nepal, as it will help teachers develop their professional capabilities and update themselves. It will also help students build and strengthen 21st century skills.

**Research Question:**


1. How does PBL approach help improve the teaching and learning practices of teachers in Social Studies subject

**Intervention:** Before starting with the implementation, Puja conducted a professional development workshop session for the teachers where they discussed different digital resources that could be used. For the first cycle of intervention, the topic selected was "Water and Mineral Resources in Nepal and its uses." You tube videos were used as a digital resource to conduct the classes and teach students. In addition, the students were assigned a group project to locate the places in the map where the different types of minerals and water resources are found in the country. At the end, the students presented their work to the teacher and other students in the class.

In the second cycle, the topic chosen was "Nepal's Donor Countries and Agencies." Students were given a choice to select the topic they wanted to work on and select their own digital resources. Every teacher discussed their individual classes and came up with two different projects - Role play and group presentation. For instance, in the role play, students were enacted as members of a donor country or agency and explained about the aid that was received or given. Few students also drew flags of donor countries and logos of agencies and explained about the financial aid.

**Key Findings:** Engagement in practice based action research has helped Puja in developing a strong theoretical and practical knowledge of the PBL approach and how it can be integrated to teach social sciences more effectively. She believes that the theory taught must connect with real life examples/situations etc, and thus, students must be given project work to build knowledge beyond the textbook and explore for themselves. The Action Research activity enabled her to improve her practice and upskill herself in planning, time management, interaction with teachers and sharing her experience and knowledge. She stated that the experience has helped her develop skills to be an effective mentor to the teachers.

Positive findings also emerged from the interviews, group discussions and surveys held with the teachers. Teachers mentioned that students showed more curiosity and confidence in speaking in front of the class and became critical thinkers, which led to an increase in their engagement. Teachers further mentioned that the action research helped teachers develop their professional capabilities and update themselves



**Implications:** The Action Research study has been a great learning opportunity for the professional development of the teachers. Moreover, it will be useful for the school administration as well, for integration of PBL activities on a regular basis will bring about a shift towards learner centered pedagogical practices. Moreover, adoption of the PBL approach will help students strengthen 21st century skills like communication, confidence and collaboration. It is important that policy makers take cognizance of this approach and it is focused upon during professional development programs for teachers.

## **Theme 3: Mathematics Education**

### **Introduction**

Mathematics education is an under-researched area in the Maldives and Afghanistan, and to a lesser extent in Nepal. Academic research in mathematics education in South Asia has mostly focused on decontextualized mathematics education research (Liutel, 2009). Mathematics is considered a body of pure knowledge to be transmitted. Even though the region exhibits huge diversity in terms of the local languages and cultural diversity, the textbooks reflect the hegemony of ideas borrowed from the global north. The focus on teacher education is providing workshops on content, hoping that they will be able to translate and adapt the material in the classroom for the students. Sociocultural and local knowledge are ignored in the mathematics education curricula of the countries in South Asia. The theoretical standpoint of the training and teaching learning materials prepared in South Asia is not aligned with the socio constructivist perspectives, and a lack of funding and resources makes it untenable to provide rich pedagogical resources or professional development opportunities for teachers to address students' learning. Therefore, collaborative action research with teachers on various themes of mathematics education can pave the way for teachers to build their knowledge of mathematics teaching and learning through practice- based learning as well as provide ways to contextualize mathematics taught in schools using local materials and languages. This is essential to provide opportunities for marginalized groups in education belonging to certain tribes, communities, or genders that face impediments in engaging with mathematics in school contexts.

### **Summary of Action Researches**

The theme of mathematics education includes six different action research projects conducted across Afghanistan and Nepal. The three fellows in Nepal worked with a total of 16 teachers (six female and ten Male). The six female teachers were from primary level and were from urban settlement. Of the 10 male teachers five were from urban and five from rural contexts. The three fellows in Afghanistan worked with a total of 25 (10 Female and 15 Male) teachers. They worked in nine government schools in the city and two Community Based Schools (CBS) that are supported by NGO, in the rural area. All three fellows worked at the primary level in Afghanistan. The 15 male teachers were from city while 10 female teachers were from rural schools

In Nepal, the problem statement focused on the traditional, lecture based and teacher-centered pedagogy in teaching practices adopted in teaching mathematics. This left students finding it challenging to comprehend mathematics topics, when there is no connection to real life applications. Two of the Nepal fellows focused on secondary level while one of them focused on primary level. At primary level the topic of fractions was focused, particularly on the use of manipulatives and connecting fraction ideas with daily lives. Another fellow focused on hands-on PBL for supporting understanding of surface area of solids while another fellow focused on the use of Geogebra to develop understanding of calculus.

In Afghanistan, the problem statements focused on issues related to learning of mathematics at primary level as there were gaps in foundational knowledge of teachers as well as lack of resources. Two of the fellows focused on the operations on the numbers, that is, addition and subtraction. While another fellow focused on the topic of fractions and use of the manipulatives



Looking at the low resource contexts in Nepal and Afghanistan, they were slightly different. While in Afghanistan, the teachers struggled with a lack of infrastructure, resources, and professional development opportunities and used the idea of giving repeated practice to students, whereas the Nepalese schools did have access to resources and infrastructure. However, in Nepal too, the teachers faced the inadequacy of professional development opportunities and were not aware of key ideas from research that can aid the development of students' understanding, like a unit in fractions or subdividing the area into a number of parts for Riemans sums.

The interventions in all the six cases included a professional development workshop for teachers which was conducted either in an offline setting or in an online mode depending on the situation of the teachers. The implementation in the classroom was supported by the fellow as well as the community of teachers. The significant changes in the second cycle for the Nepal fellows included giving more opportunity for students to engage in the classroom interaction while it was difficult for the Afghan fellows to conduct the second cycle due to challenging circumstances in Afghanistan and lack of time due to school closing for winter.

The key findings from the six research studies can be discussed at three levels. We will discuss what were some of the learning for the students and teachers who engaged in this research as reported by the fellows. Lastly key findings of the fellows learning in the process of implementing the action research will be discussed.

### **Students' Learning**

The students in the participating teachers classroom benefitted from the range of resources and pedagogic strategies used by the teachers during the implementation of the lesson plan or ideas discussed with the fellows in the workshops. The students were exposed to more practical methods of learning using manipulatives to understand the operations like addition and subtraction, concept of fraction by understanding the unit and operations on fractions as well as for secondary level topics like surface area and volume of solids. The students were found to be more interested in doing mathematics, they were more engaged in the teaching-learning process and also some fellows have reported an increase in the performance and conceptual understanding. The students also got more opportunities to express their ideas in the classroom. The action research using Geogebra also provided the opportunity for students to learn ICT skills and use Geogebra to understand calculus concepts.

### **Teachers' Learning**

The fellows' engagement with the teachers through out-of-class workshops as well as mentoring promoted discussion of important ideas and resources that teachers could use in their classrooms. In all the action research, there have been gains in teachers' knowledge of the underlying concepts like idea of unitising in fractions, knowledge of resources like Geogebra and manipulatives as well as knowledge of students' strategies like count-on and count all for solving problems of arithmetic operation that needs to be encouraged. The teachers also provided equitable opportunities for all students to engage in classroom interaction and express their ideas. The pedagogical content knowledge of adopting the right pedagogic strategy for supporting conceptual understanding was evident in some teachers when they tried using the new resources and strategies discussed in the teachers' workshop. However, there were challenges of time constraints and the busy schedule of the school and lack of support from the administration that constrained teacher engagement. Some of the teachers continued to engage despite challenges faced as they got motivated through increased student engagement.



## **Fellows' Learning**

The six fellows that engaged in leading the collaborative action research with the teachers gained not only the experience of leading the research but also explored ways to support teachers in the classroom to implement new ideas. The workshop and the follow up discussion with the teachers lead to interesting discussions that provided learning opportunities to all those engaged. All the fellows reported learning through collaboration with the teachers and also across the country by engaging with other fellows engaged in the same theme. Though intercountry discussions were limited they reported learning through the webinars and presentations of the other fellows on the same theme. Fellows also developed the knowledge of the under-resourced contexts that teachers worked in as well as the challenges that they faced daily. They learnt to negotiate with principals for action research implementation and support teacher learning through continuous mentoring. Some of the mathematical ideas were new for the fellows and thus supporting teachers to implement those ideas in the classroom helped them in learning authentically through implementation in real life classroom. Thus, it helped in establishing the theory practice link which otherwise is difficult in other kinds of workshops.

**Title:** Using Manipulatives in Teaching Fraction: An Action Research

**Name:** Anita Tiwari Joshi

**Coverage:** This research study was conducted in various schools in Nepal, involving a total of six mathematics teachers. These schools were a mix of government and private schools catering to diverse students from different socioeconomic backgrounds.

**Problem Statement and Significance of the Study:** This study aimed to address this issue by focusing on the use of manipulatives in teaching fractions. The problem was identified based on the knowledge gap, where students found fractions challenging to comprehend, and the practical gap, where mathematical knowledge was not connected to real-life applications. The theoretical gap was also explored, highlighting the need for pedagogical content knowledge among teachers. The study is significant in improving teachers' understanding of fractions and their teaching practices, enhancing students' conceptual knowledge, and linking mathematics with real-life situations.

**Research Questions:**

1. How do teachers use manipulatives to improve their pedagogical practices in fractions?
2. How does the use of manipulatives help students develop their conceptual knowledge of fractions?

**Intervention:** The research followed an action research methodology and was conducted in two cycles: a seven day initial cycle and a two to three day second cycle. The first cycle involved collaborative discussions with teachers to understand their teaching practices and challenges. Teachers applied manipulatives to teach basic concepts of fractions, such as proper/improper fractions, equivalent fractions, and like/unlike fractions. The second cycle was planned based on reflections from the first cycle.

**Key Findings:** Teachers focused on building a strong foundation for understanding the concept of part and whole in fractions. They used various strategies, including stories and interaction with manipulatives like clay, locally available materials, and fraction bars. These activities helped students grasp the importance of the whole in fractions and its role in representing different parts. Teachers also emphasized the concept of the unit in fractions. Students also benefited from various activities involving manipulatives. They learned to connect mathematical concepts with real-life situations, which was previously challenging for them. Activities included creating fraction bars, circular models, pizza topping fractions, and working with real fruits and vegetables. Students reported a deeper understanding of fractions through these hands-on experiences.

**Implications:** This research study has significant implications for both teachers and students. Teachers can enhance their teaching practices by incorporating manipulatives and focusing on the fundamental concepts of fractions. Students can develop a stronger conceptual understanding of fractions, making it easier to apply these concepts in real-life situations. The study also highlights the importance of bridging the gap between mathematical knowledge and its practical applications. Additionally, it encourages the use of low-cost manipulatives, making quality math education accessible in low-resource settings.

**Title:** Supporting Teachers to Implement Project Based Learning in Teaching Secondary Mathematics: An Action Research.

**Name:** Puskar Singh Bohora

**Coverage:** The action research was conducted with five secondary mathematics teachers from four school, two rural and two urban secondary schools, in the Kailali district and neighboring districts of Nepal

**Problem Statement and Significance of the Study:** The problem addressed in this research is the prevalent use of traditional, teacher-centered pedagogy in teaching secondary mathematics in Nepal, leading to a lack of engagement, motivation, and a high rate of misconceptions among students. The study aims to transform teachers' pedagogical practices by implementing PBL to create a more student-centered and effective learning environment. This is significant because it has the potential to improve mathematics education, address misconceptions related to the surface area of prisms and pyramids, and contribute to the achievement of educational policy goals.

**Research Questions:**

1. How do teachers develop their skills for the implementation of PBL in teaching the surface area of prism and pyramid?
2. How do teachers transform their pedagogical practices through project-based learning?

**Intervention:** The intervention involved a three-day workshop for teachers to prepare a seven-day mathematical project plan focused on the surface area of prisms and pyramids in the curriculum of grade ten mathematics. This PBL approach included facilitating students to construct knowledge through hands-on activities and presentations. The action research consisted of two cycles, with the first cycle being implemented based on the project plan. The study took place in a low-resource context where materials and resources for PBL were managed within the means of the school.

**Key Findings:** It was found that PBL promotes engaged learning among students, supports inclusive education, and contextualizes mathematical concepts. PBL also encourages creativity among students and helps reform teachers' pedagogy through contextualization. Not only students but teachers benefited from the professional development aspects of PBL and action research.

**Implications:** The findings can support secondary-level mathematics teachers in implementing PBL for student-centered pedagogy and professional development. Furthermore, the study highlights the importance of PBL in addressing misconceptions related to mathematics and it emphasizes the need for motivation and incentives to encourage teachers to reform their conventional pedagogy.

**Title:** Teaching Integration using GeoGebra: An Action Research

**Name:** Shailendra Sapkota

**Coverage:** The action research was conducted with five secondary-level Mathematics teachers from four private schools in Kathumandu, Nepal.

**Problem Statement and Significance of the Study:** In Nepal, students face difficulties in learning calculus due to the sudden introduction of this advanced mathematical concept at the secondary level without prior knowledge. Traditional lecture-based teaching dominates the mathematics classroom, limiting the visualization of mathematical concepts. To address these challenges, there is a need to integrate technology, particularly GeoGebra, as an instructional tool. For the purpose of Mathematics teachers, it provides guidance on using GeoGebra to enhance pedagogical practices and improve mathematics teaching. As for the School management, it highlights the importance of professional development for teachers through technology integration. It also offers insights into how GeoGebra can be used effectively in mathematics classrooms for the teacher trainers. It provides information for the curriculum developers about the role of GeoGebra in secondary-level mathematics education in Nepal. The study aims to investigate how the use of GeoGebra as a teaching tool could impact student learning in terms of conceptual and procedural knowledge.

**Research Question:**

1. How do teachers improve their pedagogical skills in mathematics while teaching the concepts of calculus using GeoGebra?

**Intervention:** The first cycle was implemented in an audio-visual room where pre-prepared dynamic visual materials created using GeoGebra were used in class. This phase aimed to introduce teachers to GeoGebra and show them how to use its inbuilt commands and functions for teaching calculus. The participants delivered basic lectures on derivatives and integration, and these visual materials were used to enhance understanding. In the second cycle, students were given practical experience with GeoGebra in a computer lab. This cycle was more interactive and focused on enabling students to use GeoGebra to solve various calculus problems. The participants facilitated the students' hands-on experience with GeoGebra in understanding derivatives and integration.

**Key Findings:** The study revealed several key findings: Practical-based classrooms using GeoGebra had a positive impact on students' conceptual understanding of calculus compared to teacher-centered traditional methods. The use of GeoGebra reduced the gap in the Zone of Proximal Development (ZPD) for students, allowing for immediate feedback and scaffolding. Teachers had a positive perception of GeoGebra, with a wealth of resources available online that made teaching more interactive and engaging.

**Implications:** The study provides a valuable resource for mathematics teachers to enhance their pedagogical practices through the use of GeoGebra in a low-resource context. Curriculum developers can consider the integration of technology tools like GeoGebra to enhance mathematics education. The research shows how a teacher's pedagogical content knowledge can be enriched through the TPACK model.

**Title:** Using Practical Approaches to Teaching Addition in Elementary Schools

**Name:** Zohal Niazi

**Coverage:** The study was conducted with ten female teachers. Emphasis was given on choosing students from both genders and eight girls' classes and two boys' classes of grade one to three were selected. These classes are from two CBS schools in Qarabagh district and Central Ghazni, Afghanistan

**Problem Statement and Significance of the Study:** In Afghanistan, students often find Mathematics, particularly addition, to be a difficult subject due to a lack of practical learning methods. Teachers have not received adequate training to teach mathematics in an understandable manner, and this mechanical approach to teaching mathematics has contributed to students' aversion to the subject. The overcrowded classes, the rush to complete the curriculum, and the use of traditional, impractical teaching methods are other factors leading to a lack of engagement and interest in mathematics. Practical teaching methods are often neglected, even though natural resources are available for teaching materials. This study aimed to address these issues and find efficient ways to teach elementary math, specifically addition, to students in grades 1-3. This research holds significance for teachers who aim to teach addition more meaningfully and for students who struggle with math. By providing practical solutions, manipulatives, and teaching materials, the study enhances teachers' capacity and the quality of the teaching process, making lessons more engaging and comprehensible.

**Research Objectives:**

1. To find practical and easy ways to teach elementary math (addition) to students in grades 1-3.
2. To identify useful and interesting teaching materials for teachers.

**Intervention:** Cycle 1: Involved an orientation meeting with teachers, headmasters, and students. Teachers were observed, and a pre-assessment was conducted. The focus was on identifying problems and difficulties students and teachers encountered when teaching addition. Participating teachers engaged in activities and reflected on their teaching issues. After the assessment, teachers participated in a two-day workshop that provided them with practical methods and teaching materials to make math, especially addition, more understandable and interesting for students. Students were also quizzed to determine their level of knowledge in math (addition). Cycle 2: After the workshop, a second set of observations was conducted to measure the changes in teachers' teaching methods. Teachers were encouraged to use practical approaches and manipulatives. Students were quizzed again to evaluate the impact of the training.

**Key Findings:** Some of the key observations before the training are that in several classes, a significant number of students were unable to answer addition-related questions. Mathematics, particularly addition, was considered a challenging and uninteresting subject by students. However, after the training students in all classes showed improvements in their ability to answer addition-related questions and teachers adopted more practical and engaging teaching methods, making mathematics more meaningful and interesting for students.

**Implications:** The research provides valuable insights into practical approaches to teaching mathematics, especially addition, at the elementary level. Teachers' professional development and the quality of math education in the region are enhanced. The study suggests the importance of using manipulatives and engaging teaching materials in low-resource contexts. Students' interest and understanding of mathematics can be significantly improved by implementing practical teaching methods.

**Title:** How Students Can Learn in Easy Ways to Add and Subtract Fractions

**Name:** Mohammad Naser Nasery

**Coverage:** The research study was conducted in Mazar-e-Sharif City, Balkh Province, Afghanistan. The study involved 5 government schools. The sample size included 10 teachers and 20 students (four boys and 16 girls) from 5th-grade classes in these schools.

**Problem Statement and Significance of the Study:** The study aimed to address the prevalent issue of teachers predominantly using traditional and theoretical teaching methods rather than practical and active learning when teaching fractions. The research sought to improve the teaching methods and access to learning materials to enhance students' understanding of adding and subtracting fractions. Additionally, to identify effective teaching methods and materials that could improve students' knowledge and understanding of fractions. The research sought to bridge the gap between theoretical and practical approaches to teaching fractions, helping students grasp the subject more effectively.

**Research Questions:**

1. How will teachers develop and use new methods and learning materials for practices in fractions?
2. How will the use of new approaches in teaching fractions in the classroom help in the improvement of students' understanding of fractions?

**Intervention:** The research followed a qualitative design, collecting data through classroom observations and interviews with both teachers and students. The intervention involved introducing new teaching methods and learning materials to the participating teachers. Teachers were encouraged to shift from traditional teaching methods to more active and practical approaches. Learning materials such as visual aids, manipulatives (e.g., pizza drawings, paper plates), and activities (e.g., pair work, group work, games) were utilized.

**Key Findings:** The introduction of practical methods and learning materials significantly increased students' engagement and understanding of fractions. Teachers' utilization of teaching methods such as brainstorming, group work, and visual models positively impacted students' comprehension. The practical application of theoretical concepts resulted in a deeper and more meaningful understanding of fractions. Students' ability to explain solution techniques and avoid common mistakes in fractions improved.

**Implications:** The findings of this research demonstrate the effectiveness of using practical teaching methods and learning materials to enhance students' understanding of adding and subtracting fractions. Teachers' flexibility in using various methods and materials was crucial in helping students develop a conceptual understanding of fractions. The study highlights the importance of bridging the gap between theoretical and practical approaches in teaching fractions. The research also emphasizes the need for better access to learning materials and resources, especially in low-resource contexts. Furthermore, the study underlines the significance of teacher training and ongoing support to enable them to use innovative teaching methods effectively.

**Title:** A Multi-Model Approach to Understand Teaching of Mathematical Operations in Mathematics (Addition and Subtraction) to Fourth-Grade Students

**Name:** Abduljabar Mehraban

**Coverage:** The research was conducted in four government schools in Lashkar Gah city of Helmand province, Afghanistan. The sample size included four schools, five teachers, and 25 fourth-grade students.

**Problem Statement and Significance of the Study:** This study explores teachers' practices and students' perceptions concerning diversity in the learning process and aims to provide equal opportunities for all students. The research identified challenges where teachers lacked professional knowledge, struggled to include students from diverse backgrounds, and predominantly employed a behavioristic teaching approach. Many students were passively engaged, with only those in the front actively participating. Girls, in particular, faced marginalization, often ignored by teachers. Therefore, this study identifies and addresses the challenges fourth-grade students encounter in comprehending addition and subtraction. Failure to diagnose and resolve these issues can hinder educational progress and reduce the quality of learning. The significance of this study is in two folds: Practical and theoretical. Practical teaching is most effective for students, allowing a larger number of them to learn. Teachers need to develop the ability to teach practically. While theoretical teaching is essential for many subjects, math may benefit from a more practical approach.

**Research Objectives:**

1. To diagnose the difficulties fourth-grade students face in understanding addition and subtraction.
2. To diagnose how to improve students' understanding of addition and subtraction concepts.
3. To diagnose how to increase teachers' capacity to use modern teaching methods effectively.

**Intervention:** The research employed an action research design. 5 teachers from four schools underwent training focused on diversity, inclusiveness, inclusive learning, mentoring, classroom management, and behaviour management. Teachers attended workshops to enhance their teaching methods and familiarity with technology.

**Key Findings:** Teachers improved their understanding and adoption of modern teaching methods. Students demonstrated increased interest in learning. It also improved student performance and attendance as well as enhancing teacher professionalism.

**Implications:** The findings underscore the importance of providing ongoing training and support to teachers to increase their capacity and effectiveness. Technology and practical teaching methods should be integrated into math education to make it more engaging and comprehensible. Future Directions: In the future, efforts should be made to ensure teachers have access to technology and are proficient in using it for educational purposes. Continuous training and mentorship can help teachers adapt to modern teaching methods and technology effectively



## **Theme 4: Peace Education**

### **Introduction**

Maldives, though was once one of the safest lands for civilians at one time, had embarked into a series of unprecedented crimes. The rise in crimes due to families living in overcrowded households and increase in divorce rates have led to an increase in individuals with low self esteem and emotional problems (Maldives Bureau of Statistics, 2022). Thus, instilling positive values in young minds becomes obligatory for the country in order to promote empathy for others. With the aim of minimizing the issues of social conflicts and promoting social inclusion, action research was conducted on inculcating the values in students through their lessons unconsciously in different subjects.

### **Summary of Action Researches**

For the theme Peace Education, action research was conducted by four Fellows from the Maldives. The studies involved 18 teachers from three island schools of different atolls, and 12 teachers from three schools situated in the Greater Male' Region. The theme covered using various strategies in teaching through which values relating to peace education could be inculcated in students. The strategies included using Social Emotional Learning (SEL) strategies to increase awareness and build relationship skills among students, using storytelling to instill empathy in students, using poems to enable peacebuilding and finally, using the Five Cs (Consistency, Collaboration, Cognition, Conception, and Creativity ) framework to incorporate values in students.

In the context of Maldives, there is an increase in social alienation, substance abuse, gang violence and following unconventional ideologies and extremism among the youth. However, there is a lack of social and emotional support providers, especially in the outer islands. It is crucial that teachers receive continuous and in-service training on classroom pedagogy to effectively integrate values across various subjects.

With the existing challenges in catering to the diverse needs of the students, instilling values in students within their lessons becomes highly important. The findings of action research revealed that continuous use of SEL within the classroom promotes students' empathy skills and supports the acquisition of other necessary skills to manage their emotions and achieve positive goals. Students also proved to show love and caring towards each other after the intervention. The action research that used the five C's Framework revealed that the framework is effective in integrating values and hence should be given more emphasis on this in in-service teacher training.

Findings from one of the other action researches also indicated that while storytelling is a widely used technique used to teach linguistic skills, it could also be used to allow the students to place themselves in the shoes of another set of characters, and therefore, establish stronger bonds and increase empathy. In terms of findings related to peace building, poems could be another important strategy that could be used in the classroom. Findings suggest that metaphors, repetitions and emotive words used in the poem were effective in building peace related to global issues such as discrimination. Such discussions based on poems had given students the opportunity to talk about discrimination without any feelings of uneasiness.

These findings imply the importance of implementing TPD focusing on peacebuilding and integrating values into teaching and learning across the country.



**Title:** Using Social- Emotional Learning (SEL) Strategies to Promote Empathy, Social Awareness and Relationship Skills Among Students of Key Stage 2.

**Name:** Ahmed Aboobakuru

**Coverage:** The study was carried out at a government school from an outer island, which is the most populated public secondary school in that atoll. A total of 5 teachers from Key Stage 2 teaching subjects Social Studies, Science, Creative Arts, English and Physical Education were chosen to implement the interventions to students in the classrooms.

**Problem Statement and Significance of Study:** Due to lack of focus on inculcating values among students and due to exam-oriented teaching behavioural issues such as bullying, low level respect and verbal threats are on the increase in Maldivian schools. For example, the reporting of bullying, especially cyberbullying has risen, according to bullying reported in 2014 (Miolene, 2019). Therefore, in a low resource setting like the Maldives where providers of social, emotional support are inadequate to meet the demands requiring individuals across the scattered islands, promoting such values among students is crucial. The findings can be used to implement curriculum programs in the school that focus on improving social and emotional competencies that are highlighted in the national curriculum of Maldives.

**Research Questions:**

1. How do SEL strategies promote empathy, social awareness and relationship skills among the students of Key Stage 2?
  - a. What are the positive changes in students' recognition of their own emotions and resonance with others' emotional status through SEL strategies? (Empathy)
  - a. What are the significant differences in students' abilities to take the perspectives of others, appreciate diversity and respect others? (Social Awareness)
  - a. How do students apply relationship skills in order to maintain positive and healthy relationships with others? (Relationship Skills)

**Intervention:** Before any of the interventions were carried out, there was a FDG with participants in order to identify their knowledge and skills on SEL in classrooms. There are a total of 13 teachers who fit the criteria set by the researcher for the sample. A total of 5 teachers out of these 13 teachers from Key Stage 2, teaching subjects Social Studies, Science, Creative Arts, English and Physical Education were chosen to implement the interventions to students in the classrooms

The research was an action research conducted in one of the most populated secondary schools in the atolls. The first component of the intervention included preparing lesson plans and conducting lessons on SEL. The second component of the intervention consisted of early morning sessions of 15 minutes with the students. The third component of the intervention were weekly journals maintained by the participating students. Data was collected through FDGs, teachers' and students' reflective journals, observations of the Circle Time and semi-structured interviews with the students.

**Key Findings:** The research indicated that presently the school does not specifically focus on SEL. However, the school was practicing circle time every Monday in which a bit of SEL strategies were practiced. The findings of the research also revealed that effective SEL strategies promote a positive learning environment in school as students learn empathy skills through the SEL activities. It is found that the SEL strategies help students to practice empathy skills that they learn from the SEL based lessons in their classrooms by understanding how others feelings and emotion and by using positive words towards each other.

From the data gathered from the interviews and teachers' journals, and observations, it is identified that the SEL strategies promoted students' empathy skills. Indeed, all the teachers agreed that the activities in SEL based lessons supported students to acquire a number of skills that aid in understanding and managing emotions, achievement of positive goals, and being able to feel and show empathy for others. Teachers have mentioned various situations that they have observed students showing love and care to each other after the intervention.

This research has shown that through SEL strategies students learn to appreciate the diversity. The finding revealed that the students were more ready to accept the individual differences and involve these students in their daily classroom activities.

The results of this study indicated that students demonstrated other significant competencies when they were given lessons based on SEL.

**Implications:** The study implies that it is important to teach SEL strategies to build a peaceful and positive classroom environment. SEL programs can also help to improve students' mental health. This is because SEL skills help students to develop coping mechanisms for dealing with stress, anxiety, and depression. By incorporating SEL strategies into the curriculum and classroom environment, teachers can help students to develop the social-emotional skills they need to succeed in school and in life.

**Title:** Fostering Empathetic Behaviour through Storytelling among Primary Students of Maldives

**Name:** Visama Hassan

**Coverage:** The study is done in a specific school in Hulhumale' in the greater Male area, which also includes a diversity of migrant students from the outer atolls. The research enlisted the participation of eight teachers spanning the third grade to facilitate the action research process.

**Problem Statement and Significance of the Study:** At the rate that anti socialist acts like bullying are increasing in the Maldives, the need for inculcating values such as empathy becomes crucial for ensuring harmony and peace. And given the fact that today, in the Maldives, there is moral decadence, it is essential that educators promote a pedagogy of peace in the country. Empathy helps children make new friends and build strong, long-lasting emotional bonds. It is also crucial because it allows us to understand the emotions of others and respond appropriately and is frequently associated with social behaviour, and a significant body of research indicates that higher empathy levels lead to more altruistic behaviour. The findings of this study will assist teachers in realising that empathy may be instilled in kids through storytelling. Furthermore, it will give the Ministry of Education and teacher training centres a favourable outlook in educating instructors to employ storytelling to instill values in children.

**Research Questions:**

1. How can stories be used as a resource in the classroom to promote empathy in young learners?
  - a. How do features of the story – plot, character, stylistic devices – help in building empathy?
  - b. What kinds of activities in the classroom using stories can help build empathy?
  - c. What pedagogies adopted by teachers in storytelling enable students to build empathy?
  - d. What kind of teacher mentoring practices can help teach empathy through storytelling?

**Intervention:** The study employed a qualitative action research design, which encompassed a three-day TPD program focused on the integration of storytelling within classroom settings. To inform the study, preliminary focus group interviews were conducted, providing a foundational understanding of the context. Data collection techniques included the analysis of students' artifacts and the audio recordings of their presentations. Each participating teacher underwent two teaching cycles within their respective classrooms, forming the basis for data collection and analysis. In this study, the scope is confined to examining whether storytelling can serve as a means to instill empathy, ultimately contributing to the cultivation of peace.

**Findings:** The study's findings reveal that while schools have incorporated storytelling initiatives, the deliberate cultivation of values through narratives has not been a prominent focus. Instead, the primary utilization has been for enhancing students' linguistic skills. However, in terms of the story's plots and characters, the findings indicate that storytelling holds potential for instilling empathy among students.

Notably, the children demonstrated an ability not only to grasp the emotions of the characters but also to formulate their own conclusions. Engaging in discussions about these characters and considering alternative perspectives led to significant progress in this regard. Furthermore, encouraging students to empathetically immerse themselves in the shoes of various characters and engaging in shared reading experiences fosters strong emotional connections with the characters, thereby effectively teaching empathy.

**Implications:** The study implies that storytelling can be used as a very effective tool to inculcate the value of empathy in primary students.

**Title:** The Role of Literature in Global Citizenship Education for Peacebuilding in Maldivian English as a Second Language Classrooms.

**Name:** Aminath Wafa Waheedh

**Coverage:** The participants of this action research were five English as a Second Language (ESL) teachers of grade nine from Capital Male' and other outer island (Noonu, Raa and Laamu atoll) schools of the Maldives. Teachers were selected using purposive sampling based on their qualification and years of experience. Hence all teachers have a first degree in English language teaching and three teachers had over 14 years of experience while the remaining two teachers had two years of experience.

**Problem Statement and Significance of the Study:** Despite significant development within the country, an increase in dangerous behaviours including social alienation, substance abuse, gang violence and following unconventional ideologies and extremism among the youth is observed (NCTC and UNDP in the Maldives, 2019). Since most of these issues are controversial and sensitive, teachers often feel reluctant to address these issues in the classroom. Although, peacebuilding with the use of literature is an extremely under researched area, hence this study would guide future researchers on connecting literature on global issues for peacebuilding. It would also pave the way for further research in the Maldives, considering there has been no research on use of literature for peacebuilding in the Maldivian classroom context.


**Research Question:**

1. How does the literature enable peacebuilding at intrapersonal, interpersonal, intergroup, and international levels in the Maldivian ESL classroom of grade 9?

**Intervention:** The design of the action research involves a two-session professional development to instruct teachers on Global Citizenship Education (GCED) and Peacebuilding. Semi-structured online interviews were also conducted with teachers as FDG pre and post intervention. For the intervention, a specific literary text, in this case a poem, was given to teachers to integrate peace concepts into the classroom for discussion. Classroom data were gathered by using a self-reporting observation guide completed by teachers. Moreover, teachers shared reflection documents as per a reflection rubric provided after each lesson.

**Key Findings:** According to the findings of this study, teachers agreed the poem paved the way for rich discussions related to global issues. This has also allowed students to engage in analysing the poem, give new meaning to the concept of power, while improving their language, making literary text one of the best ways for peacebuilding. Furthermore, data revealed that the metaphors, repetitions and emotive words used in the poem were effective in building peace. In terms of discussions related to religion, almost all teachers stated that they felt reluctant. On the other hand, students were able to relate to incidents during the discussion on different aspects of discrimination.

Teachers' reflections revealed the following: Teachers were able to guide students to emphasize the point that respecting each other is important to make the world a peaceful place; Students' responses with respect to power were associated with their community and world leaders; The discussion provided students with the opportunity to free themselves from the uneasiness feeling due to discrimination; Teachers also found that students talk more when paired in small groups instead as a whole one group; Lastly students had a hard time analyzing the poem, this was eased with asking critical questions and allowing others students to share their perspective on shared views.



**Implications:** This action research implies that literary text has the potential to bring global issues into the classroom and foster peacebuilding. The findings are of great value to policymakers in adopting GCDE principles in achieving sustainable development goals in the country. More importantly, the tool could be used during in-service training for teachers to bring global issues into the classroom and encourage peacebuilding.

**Title:** An investigation on the role of teachers in integrating values in their teaching and learning environment by using the Five C's (Consistency, Collaboration, Cognition, Conception, and Creativity) Framework

**Name:** Aishath Naseer

**Coverage:** A total of five grade six teachers from a government school in Male' participated in this study.

**Problem Statement and Significance of the Study:** This action research study focuses on the integration of values in the teaching and learning environment by utilizing the Five C's framework. Even though the focus of the current curriculum is to integrate essential values, the Maldives education system has inclined to be more results-oriented. It is evident that less emphasis is given by the teachers on integrating values in their teaching practices or the affective domain has been neglected in the teaching and learning environment.


In line with the Maldives National Curriculum Framework, which emphasizes the cultivation of competencies, traits, values, attitudes, and skills among students, this action research addressed the need for values integration in education.

**Research Questions:**

1. What strategies are the teachers using to integrate values in their teaching and learning environment?
2. What value categories mentioned in the MNCF are being reflected through the classroom activities by using the 5C's framework?
3. How does asking high order questions assist in integrating values in an explicit manner? How does the 5C's framework C's assists in integrating values in an explicit manner?
4. What behavioral changes are noticed in students and teachers after the intervention?

**Intervention:** The study employed purposive sampling to select grade six class teachers who taught across multiple subjects except Dhivehi, Islam, and Quran, which is taught in Maldivian language, Dhivehi. The research employed a combination of focus group interviews, classroom observations, lesson plan analysis, and questionnaire responses, which were manually transcribed and analysed using thematic coding.

**Findings:** During the first cycle implementation, the data highlighted the efficacy of the Five C's framework in facilitating explicit integration of values within the teaching and learning environment. For the second cycle of implementation, based on the observations of the first cycle, teachers were suggested to use higher-order questions in their lesson plans. After the second cycle, it was found that teachers believe that the framework assists in boosting the confidence of teachers and students. In addition, it assists in teaching values relating to life skills, also includes and engages different ability level students in the activities. Hence, this study underscored the potential of this framework to empower teachers to infuse values across subject areas. Consequently, the research suggested a reinforcement of curriculum-related in-service teacher training based on these findings.



**Implications:** The results of this study implies that at the school level, teachers should receive consistent and specialized in-service training on classroom pedagogy to effectively integrate values across various subjects. Furthermore, the study proposed mentorship programs, where experienced teachers or grade leaders can guide and support their colleagues, fostering collaborative learning through shared tasks and experiences.

In conclusion, this research contributed to enhancing the pedagogical practices of Grade six teachers by leveraging the Five C's framework for values integration. By addressing gaps and improving practices, the study emphasized the importance of values in holistic education. The findings have implications for curriculum development, teacher training, and collaborative learning strategies, ultimately promoting a more value-centric teaching and learning environment.

## **Theme 5: Science Education**

### **Introduction**

Science is a subject that includes process skills and requires students to acquire and master certain skills such as observing qualities, measuring quantities, classifying, inferring, predicting, experimenting and so on. However, due to time constraints and due to limited resources (both in terms of human and capital) available in the South Asian countries, science is taught with a more content focused approach rather than a skills centered approach.

In order to improve the quality of science education in Nepal, a lot of effort has been put by the government, such as implementing reform programs, providing teaching training and increasing infrastructure (Pudel and Rajbhandary, 2022). However, schools and teachers are still presented with challenges especially due to lack of educational materials. Despite teachers being trained and encouraged to apply new student centered teaching, they have no choice but to focus on teacher centered methods (Borg, 2023). Lack of resources in remote areas of countries are common issues for Maldives and Afghanistan as well. According to Danish (2022), “science education is one of the fundamental issues that have been reestablished in Afghanistan and needs improvement” (p.16). Regardless of the training given to teachers and resources provided by government and other non profit organizations, there is a long way to go in terms of improvement, especially for students and teachers in rural areas.


Therefore, as scientific skills are the mastermind of all successful interventions related to science and discovery, it is crucial to ensure that students are taught to use these skills. Thus, science teaching practices need to be researched in order to solve the existing problems, and more so, through action research done by teachers on their own practices.

### **Summary of Action Researches**

At a time when STEM education is at the forefront of discussions, the need for innovative practices to engage students to mastering science is more than memorizing formulas and theories. Science education helps students develop better understanding, knowledge of how and why things function. Hence, as part of MATPD project fellows training in SATE Fellowship focused their action research on the Science education theme. This included seven Fellows from Nepal, one Fellow from the Maldives and three Fellows from Afghanistan. The studies were conducted among 70 schoolteachers in total from the schools; 27 teachers from Afghanistan, four from the Maldives and 39 from Nepal. These action researches covered schools from different areas, such as rural, cities and provinces. From the 36 schools selected by fellows, the majority of the schools are public schools, while others were private and community-based schools.

Considering there is only one action research from Maldives on this theme, Afghanistan and Nepal are faced with more challenges with regard to low-resource settings. These two countries are lacking in resources both in terms of equipment needed like textbooks as well as infrastructural resources such as science labs and furniture, specially schools situated in rural areas and community-based schools. The issue with lack of trained teachers in science pedagogical and instructional skills exists in all three countries while the problem of novice teachers not getting the opportunities for professional development is inclusive for Afghanistan.





The majority of the action research conducted on this theme mainly highlighted different pedagogical approaches such as art based, experimental, inquiry-based, investigative, project work, using worksheets and locally available resources in teaching science topics. Additionally, there were two action researches that focused on using ICT-based tools and TPACK principles in teaching approaches. Understanding students' misconceptions and factors that hinder the learning of science topics are also areas fellows explored.

The findings revealed that using constructivist approaches and specific pedagogies relevant to teaching science proved to be effective and contributed to a better understanding of science concepts by students. Furthermore, it has made learning more enjoyable and increased student engagement by affording students with knowledge, content, and practical and experimental experiences. It also helped teachers to improve their pedagogical practices, scientific process skills, views, and reflection towards science, science-related questioning and technologies, at the same time improving communication skills and collaboration among students. Using ICT tools in teaching science increased students' motivation and enthusiasm.

Implications from this theme conclude that there is a need in all three countries for more support and training in science specific pedagogies and instructional skills to be included in their TPD.

**Title:** Student-centered ICT Integration in Science Teaching and Learning

**Name:** Fathimath Azeema

**Coverage:** Four school teachers who teach science subjects for 6th to 8th graders participated in the action research. The teachers were selected from the same government school situated in Capital city Male'.

**Problem statement and Significance of the study:** Although ICT is integrated into teaching and learning in Maldives schools, teachers need proper guidance and direction so that ICT can be used in a more meaningful manner, especially in student-centric rather than teacher-centric ways. This study can help to recognize the current practices of ICT integration in science classrooms and find out whether the integration occurs in student centered ways. Hence, the findings will help to further strengthen the student-centered learning occurring in classrooms through the students' use of ICT based applications.

This study can also be used to provide input to develop training and interventions necessary to develop and strengthen student centered ICT integration in science classrooms. This study will also highlight the benefits of this ICT based activity to students' science classrooms and how teachers use the technology to enhance the classroom experience. Hence, this study contributes to strengthening the student-centered learning that takes place in science classrooms through the students' use of ICT-based applications.

**Research Question:**

1. How does supporting teachers to teach the topic of "cell structure and organization" using ICT based tools lead to student centered teaching and learning?

**Intervention:** The design of the action research included two cycles. First, an initial meeting with teachers was conducted before the training. Importance of professional development and the professional development through action research was explained in the initial meeting. A pre-interview was conducted with individual teachers to find out their understanding of student-centered teaching, student-centered use of ICT and about their understanding and utilization of the selected ICT application in science teaching. Two training sessions were conducted to teachers, regarding the student-centered ICT use and regarding the use of selected ICT applications in teaching and learning of 'cell' topics. Interviews and observations were conducted for data collection and data was analysed by coding and identifying themes.

**Key Findings:** During the pre-implementation interviews teachers mentioned the importance of using ICT for teaching and learning science subjects. More importantly, they believed that using ICT will be effective in teaching "cell" topics. Although in some grades hands-on practical activities are being conducted in teaching "cell" topics, in general, ICT-based applications were not used in teaching Science. It was observed that teachers applied pedagogical approaches in implementing ICT-based applications in teaching the cell topic during the lesson. During the post-implementation interviews teachers stated that they have observed a high level of students' motivation, enthusiasm and active engagement during the lesson. However, some teachers highlighted that more planning needs to be done for the lesson.

During the action research, all teachers were cooperative and successfully conducted the intervention. However, there were challenges such as not being able to use the tablets given to students due to restrictions in installing new applications and using the internet. Moreover, since there is only one computer lab in the school, teachers had to wait for the availability of the lab. The findings of this action contribute to theory and practice because the insights of this action research are rare in the Maldivian context and the experience the participant teachers gained will be useful in their teaching practices.

**Implications:** ICT based applications related to the topic cell and ICT based applications related to other science lessons could also be used to carry out some of the lessons. To effectively utilize the power of ICT meaningful content must be available to teachers, it is also recommended to provide the necessary applications and OER resources for teachers to utilize. Teachers need to become knowledgeable about the different applications and OER available related to science teaching and learning. Furthermore, as the study revealed that ICT related training helped teachers in their instruction, for successful integration of ICT teacher training, professional development or mentoring aimed at motivating teachers to integrate ICT is necessary. Training is also needed to develop teacher competency because as Bingimlas (2009) reports that teachers will face barriers and challenges if they do not know how to effectively use ICTS and will find it difficult to overcome them.

**Title:** Teaching 'Gases' Through the Experimental Method: An Action Research

**Name:** Narayan Prasad Sapkota

**Coverage:** This action research initiative was undertaken, encompassing seven educators across three distinct educational institutions—government, private, and army welfare-funded schools—located in the Kaski and Tanahu Districts of the Gandaki province in Nepal. The primary focus of this research was the delivery of science education to ninth-grade students.

**Problem Statement and Significance of the study:** In Nepal, a notable deficit in scientific knowledge and proficient technological utilization exists, primarily attributed to the inadequacy of effective science pedagogy and instructional techniques. This deficiency in practical-oriented science instruction has resulted in suboptimal educational outcomes, characterized by low academic achievements among students. All three of these educational institutions encountered resource-related challenges, stemming from either a scarcity of material resources or a deficiency in teacher competence and willingness to employ effective instructional methods. This study sought to not only identify improved pedagogical practices but also to establish more effective teaching and learning methodologies for educators engaged in ninth-grade instruction. By doing so, it aimed to facilitate students in the development and refinement of their skills and capabilities, aligning with the objectives outlined in the National Curriculum Framework of 2021. This research had a specific focus on assessing the efficacy of experimental teaching methods employed by educators when instructing the "Gas" chapter to ninth-grade students.


**Research Questions:**

1. How do teachers improve their pedagogical practices using experimental methods while teaching 'Gas' chapter in grade 9?
2. How do experimental methods help grade nine students learn the concept of Gases conceptually?

**Intervention:** The intervention involved two cycles of TPD on teaching the topic ' Gas' through the experimental method and it involved seven teachers and 290 students from the three schools. The teachers were selected through random sampling. During the first cycle workshops on hydrogen and oxygen gas were conducted for different teachers. This was followed by an implementation and feedback session. Questionnaires, interviews, and observations were used to collect data. Baseline surveys were administered prior to the first cycle.

**Key Findings:** The study's findings underscore the imperative role of integrating practical work as both a cognitive and hands-on endeavor within the context of teaching chemistry's "Gases" to ninth-grade students. This holistic approach, encompassing both classroom and extracurricular settings, emerges as an indispensable element of effective chemistry education. It not only imparts students with essential subject knowledge but also equips them with practical and experimental experiences. The research illuminates that educators' attitudes, aptitude, competence, and experience exert significant influence over students' active engagement in practical sessions, their level of interest, motivation, and ultimately, their academic achievements.

Based on the study's findings, the following conclusions can be drawn that teachers' attitudes and skills significantly influence and correlate with students' participation in chemistry practical classes. The teachers' instructional methods have a direct impact on sustaining students' interest and participation in chemistry practical classes, particularly regarding the "Gas" topic. The teachers' experience plays a vital role in motivating and enhancing students' engagement in chemistry practical classes and the teacher competence is positively associated with students' academic achievements in chemistry practical classes.



**Implications:** To conclude, the study highlights that integrating practical work, both in and outside the classroom, is an essential component of effective chemistry teaching for ninth-grade students. It is deemed inconceivable to teach chemistry effectively without incorporating practical experiences, as they provide students with valuable knowledge, content, and experimental skills. This approach benefits students of all abilities, fostering the development of their knowledge, skills, and attitudes. Integrating practical work challenges students to observe, explain, and apply scientific principles, thus enabling a more effective and efficient engagement with the subject.

**Title:** Conducting Science Practical Classes by Preparing and Using Worksheets

**Name:** Raj Kumar Dhakal

**Coverage:** This action research was conducted in the Kaski district of the Gandaki Province of Nepal. Five schools were selected from Pokhara Metropolis and one school from Rupa Rural Municipality. Amongst them three are community based government schools, another three are private and one is a trust run school. Since there are no female science teachers working in the selected schools, a total of six male teachers, who teach grade 9 participated in this study.

**Problem statement and Significance of the study:** Science education is an area in which practical work is necessary. As per the curriculum of Nepal, science classes should focus on practical or project-based activities. However, in schools, as part of the lessons, practical activities are not mandatory or teachers are unable to conduct them due to a variety of reasons. For instance, the unavailability of resources and science labs, large number of students, lack of support from the administration, lack of skills, manpower, structured plans and worksheets are some of those. The study will be crucial for science teachers for increasing the effectiveness of their lessons by using worksheets for practical sessions.

**Research Questions:**

1. How do teachers improve their pedagogical practice in conducting science practical classes by preparing and using worksheets?
2. What are teachers' reflections about the effectiveness of worksheets?

**Intervention:** The design and intervention of the study consist of an introductory meeting with teachers, a TPD workshop conducted physically, where teachers prepared three worksheets. A pre-survey was conducted to understand the status of practical classes, and reflections were done after each cycle. These reflections were collected from the teachers through google forms. Two cycles were completed where teachers conducted three practical classes in the first cycle and one in the second.

**Key Findings:** In two of the schools, practical classes were taken weekly while in the remaining four schools it was taken whenever the teacher wanted. Not all teachers use worksheets although they are aware of it. Teachers highlighted that using worksheets resulted in more effective learning and it helps students for better understanding. Moreover, students found the practical classes more interesting and helpful to complete the activities effectively. Among the challenges teachers mentioned include: insufficient space to accommodate all students in the lab; lack of time and appropriate apparatus; and differences in learning capacities of students. Teachers also suggested ways to improve practical activities such as to take theory classes before the practical, assign worksheets to each individual student instead of groups, and prepare worksheets with students' involvement. After the second cycle, teachers believed that worksheets are important in conducting practical classes. They also stated that with worksheets learning outcomes are better.

**Implications:** This study implies the effectiveness of using worksheets in practical classes. During this study, teachers were motivated to conduct the practical classes. However, professional development related to practical classes needs to be conducted for teachers.

**Title:** Assessing the factors for students' lack of interest at seven grade physics in Khadija high school of Jawzjan province

**Name:** Jamila Mahmoodzada

**Coverage:** This study was conducted at a public High School in the Jawzjan province of Afghanistan, involving a cohort of 30 seventh-grade students and 10 female teachers.

**Problem statement and Significance of the study:** In Afghanistan, the educational landscape spanning various provinces grapples with substantial impediments. Despite resource scarcity, encompassing deficiencies in infrastructure, classroom facilities, textbooks, and teaching materials, students persevere in their pursuit of education. The heterogeneity in teachers' subject expertise further shapes the educational experiences of these students. Notably, the absence of essential laboratory facilities, as well as the lack of accessible libraries and internet resources, underscores the resource constraints in this low-resource context.

Compounded by the burdens of civil strife, economic instability, and family financial challenges, both older and younger generations, including students, bear the brunt of these unfortunate circumstances. Consequently, their motivation and mental well-being suffer, leading to reduced engagement and proficiency, particularly in subjects like physics. Within this complex landscape, this action research endeavors to address two pivotal inquiries: firstly, an exploration into the factors contributing to students' diminished interest in physics; and secondly, an investigation into the multifaceted barriers obstructing the learning of physics among seventh-grade students.

The research was designed to address the students' waning interest in the subject of physics, which had been expressed as a concern due to perceived difficulties in comprehending the subject matter effectively. Hence, this research will help to understand the reasons for students' lack of interest in subject physics and how teachers could motivate students towards learning physics.

**Research Question:**

1. What are the reasons why seventh grade students are not interested in learning physics?

**Intervention:** The statistical population for this study encompassed both the teaching staff and students from a High School. The research was conducted as an integral part of the teachers' professional development sessions. In addition to the questionnaire, data collection involved the use of mobile and tablet devices. The intervention phase consisted of the successful completion of two cycles. The research primarily targeted understanding the factors contributing to students' disinterest in the subject of physics.

**Findings:** Out of the 30 students surveyed, 10 students hailed from local areas, while 20 students resided in the city. Interestingly, all students expressed satisfaction with the teaching and learning methods employed at the school. Among the 10 female teachers surveyed, eight of them reported being content with the teaching and learning process in Afghanistan. However, two teachers expressed dissatisfaction, highlighting potential areas for improvement. It is noted that the findings shed light on the need for further investigation and targeted interventions to address the issue of disinterest among students in the subject of physics at the seventh-grade level.

This research highlights the pressing issue of students' lack of interest in the subject of physics at the High School, mirroring the broader challenges faced by education in Afghanistan. Both professors and students were involved in the investigation, shedding light on various factors contributing to the students' struggle in learning physics at the seventh-grade level. These include teachers lacking mastery over the subject, ineffective teaching methods, and a lack of understanding and connection between teachers and students. These issues significantly impact students' motivation to engage with the subject. Nevertheless, the research also reveals the dedication of the school's professors in striving to encourage students and create a positive learning environment. Despite the challenges, the professors exhibit a strong commitment to nurturing a conducive atmosphere for students to enjoy their studies and pursue continuous learning.

**Implications:** In the broader context of Afghanistan's educational landscape, it is imperative to address the overarching challenges of resource scarcity, infrastructure deficits, and socio economic hardships. Confronting these issues head-on is pivotal in establishing an educational milieu conducive to effective and enjoyable learning experiences. By collectively acknowledging and proactively resolving these challenges, we can work towards a brighter educational future, not only for the students of the High School but also for the wider educational community.

It is noteworthy that a segment of the survey and classroom observations illuminated two significant challenges: a deficiency in textbooks and suboptimal teaching and learning environments. These challenges underscore the urgent need for systemic improvements in educational resources and facilities.



**Title:** Adopting Art based Pedagogy in grade 10 Science Teaching: An Action research

**Name:** Rabina Maharjan

**Coverage:** The action research took place in five different community schools of Kathmandu Metropolitan city, one of which is a girls' school while the rest of the schools are co-ed schools. A total of five teachers, one from each school took part in the study. The schools chosen are mostly located in the city of Kathmandu Metropolitan city.


**Problem Statement and Significance of the Study:** The current Nepali school education system is implementing an integrated curriculum from grade one to three, which embraces the multidisciplinary and interdisciplinary approach in teaching learning process. For this, different innovative approaches in the teaching learning process should be embraced by our secondary level teachers. Art based pedagogy is considered as one of the pedagogical approaches that can bring the change that today's education system is seeking, because art has always been a catalyst for challenging conventional beliefs and bringing about a change.

This study would be useful for the policy makers for addressing the findings of the study in policy such as designing teacher training curriculums, teachers' guide, reference materials and so on. I hope the study would be a great help for school administration as well, since it can guide them in rethinking their pedagogy they are using and switching their practices towards innovative pedagogies such as art-based pedagogy. Similarly, the study would shed light on the challenges that the teachers are facing during the implementation of art-based pedagogy in their classroom. In addition to this, the study would benefit the students' learning and help in fostering the quality of our school education. Finally, I believe this small-scale TPD project can be significant in eliciting the concerned stakeholders regarding the consideration of art-based pedagogy in teacher development courses.

**Research Questions:**

1. How can teachers be supported to adopt art-based pedagogy to increase 10th graders' engagement in science?
2. How effective is art-based pedagogy in teaching science?

**Intervention:** This action research was carried out in two cycles. In the first cycle, three face-to-face sessions and classroom implementation of art-based pedagogy was carried out. In the first session, different art-based pedagogy such as poems, skits, jingles etc were introduced, that can be implemented in science teaching in order to give them conceptual clarity regarding the art-based pedagogy. In the second session, the participant teachers were allowed to design the art-based activity in pairs. Necessary support was provided during the design of the activity. Once the activity is ready, the second intervention of the research was carried out in order to examine whether the art-based activity would increase the engagement of students or not. For this, teachers were instructed to incorporate the designed art-based activity in their daily lesson plan. Then they implemented the lesson plans in their classrooms. At least two classes of each participant were observed and feedback was provided whenever necessary. Similarly, teachers were requested to interact through a community of practice (telegram group or messenger group) where they shared their experiences through photos, videos, and texts. This helped them in strengthening their skills as well as the aspiration of adopting art-based pedagogy.



**Key Findings:** The finding indicates that the teachers have perceived art-based pedagogy as an entry point in order to enhance the students' interest in science. They were also willing to learn other innovative pedagogy. The biggest success of this action research was one of the participants implemented art-based pedagogy in other grades on her own which was not in the plan. She then shared her experience including her students' performance. Another interesting finding was that during the second cycle of the action research, there was a drama to be performed by students; the script was written during the workshop, while implementing the lesson plan, the students from one of the schools did not follow the prepared script; rather they created a new plot and dialogues for the drama by themselves and performed in front of the class.

**Implications:** The study implies that science teaching does not solely depend on conventional science teaching methods. Rather innovative pedagogies such as art based pedagogy plays a significant role in teaching science to students.

**Title:** A Study of Identifying and Addressing Students' Misconceptions Regarding Thermodynamics (Heat Transfer).

**Name:** Fazila Muruwat, Afghanistan

**Coverage:** This research was based on classroom observations of teaching thermodynamics in eighth standard in three secondary girls' schools in Kunar province. A total of eight physics teachers took part in the study.

**Problem Statement and Significance of the study:** Science education is one of the key parts of Afghan school's curriculum and physics as an aspect of sciences is still accepted as a difficult subject. Most of the girls' schools lack trained and competent physics teachers, laboratories and computer labs. Teachers who were assigned earlier have participated in in-service teachers' training (INSET) workshops (before 2016). Most of the novice teachers did not get this opportunity to participate in capacity enhancement/ skills building workshops. The government authorities have conducted a series of workshops to equip science teachers with the skills and knowledge to teach the science curriculum.

Understanding students' misconceptions are absolutely crucial for successful teaching and learning practice and also to understand students' interaction and interest in the subject. By this we can critically look at the current situation of teaching experience, perspective of pedagogy, content knowledge, and students' work. This will help the teacher to improve achievement of teaching learning outcomes.

This research enabled stakeholders to come together and create connections of contents, pedagogy and technology, to enhance skills, knowledge, beliefs and practice. It also enabled enhancing the pedagogical practices of their teaching, to encourage students to actively participate in learning of the topic thermodynamics. Identifying students' misconceptions regarding the concept of heat and temperature would help teachers to understand what the students already know and what needs to be changed in future.

**Research Objective:**

1. To identify students misconceptions of the topic thermodynamics.

**Intervention:** The intervention was divided into two cycles. In cycle one, a workshop was conducted for the teachers on active methods of teaching, mentoring, coaching, peer mentoring and fundamentals of action research. Teachers were asked to design student centered (practical) sessions on the topic Thermodynamics and then the researcher conducted observation of classroom teaching, group discussion observation of students, while they were working on heat transfer mechanism, usages, examples and types of things that can transfer heat. The intervention also included discussion on specific situations in the process of teaching and learning, and provided more information about resources which can help for the teachers professional development.

**Key Findings:** The results indicated that there are misconceptions in relation to the topic, more specifically, specific concepts such as, heat transfer, conduction, convection and radiation. Differences in students' understanding of such abstract physics topics were seen after the intervention. In order to avoid misconceptions, this topic must be taught by hands-on and practical approaches, accompanied by mentoring and coaching with frequent constructive feedback for the groups and individual students.

**Implications:** The study implies that identifying and correcting students' misconceptions lead to deeper and more accurate understanding of thermodynamics among students improving their overall learning outcomes. Further the students are better prepared for real life applications.

**Title:** Supporting Teachers to Develop and Use Project-Based Activities for Meaningful Learning in Grade 9 Biology: An Action Research

**Name:** Khil Narayan Shrestha

**Coverage:** A total of six secondary school teachers with four from urban settings, three from Kathmandu and one from Bhaktapur participated in the study. Two schools were chosen from Kabhrepalanchok district which is a suburb district. Although students from urban settings had the advantage of having more competent teachers and resources, students from rural areas were more privileged in terms of exposure to the natural environment, which is important for Science learning.

**Problem Statement and Significance of the study:** In recent days, there has been a shift from the traditional way of teaching and learning to a more modern method of knowledge, which is the co-construction of knowledge. Recent developments in learning approaches focus on constructivist learning where students are more actively engaged in creating their own knowledge. The secondary science level curriculum in Nepal has therefore shifted to PBL to engage students in context-related instructional practices. However, PBL is a much ignored concept in Science teaching in Nepal.

This study will be significant to demonstrate how this provision of the curriculum can be implemented in the classroom teaching and learning process. The finding of this research is a showcase of strategies to achieve intended learning outcomes from project-based activities in the curriculum. Moreover, since curriculum development is a continuous process, this research provides a basis for further amendments on the curriculum. Thus, this study is significant to value adding in the policy making process in the field of curriculum development, curricular material development and TPD course development.


#### **Research Questions:**

1. How do I support teachers to develop and use projects for effective learning in grade 9 science?
  - a. How can teachers be supported to design relevant project based activities and facilitate those activities in grade 9 science teaching?
  - b. How can teachers be supported to use project based activities as a method of instruction?
  - c. How can teachers be supported to use project based activities as a tool for the internal assessment system as provisioned by the curriculum?

**Intervention:** The intervention included 4 steps: plan, observe, action and reflect. At the initial stage, a workshop was conducted, which followed the choosing of the topic for intervention and then a capacity development workshop on designing and implementing project works. The intervention was done in two cycles, where the planning was done and intervention was implemented with reflections done to see what could be improved in the second cycle. In the second cycle, the implementation was done with the required changes.

**Key Findings:** The findings revealed that this collaborative way of designing and using PBL empowered teachers with student centered activities. Ultimately, students get opportunities to understand authentic knowledge, equipped with skills such as communication skills, collaboration skills, ICT skills, etc.

School administrators and principals could utilize the findings of this study to formulate an overall school improvement plan. They could internalize the need of project works which leads them to coordinate with parents, teachers, students and other stakeholder to engage students in field-based activities and hands on activities



**Implications:** The study implies that TPACK integration could be one of the basis for training teachers and improving their teaching practices. Therefore, the government can organize training in different settings with other subject teachers as well.

**Title:** Making Afghani Students Interested in Science

**Name:** Rahmatullah Kakar

**Coverage:** This research centers on elevating students' interest in science education among 4th and 5th graders in four private primary schools within the Paktika Province of Afghanistan. A total of nine teachers took part in this research.

**Problem Statement and Significance of the study:** The significance of this research emerges from the realization that current teaching practices lack the desired positive impact on students' engagement with science subjects. The study revealed a gap in science education, particularly in the 5th grade. By addressing this gap, the conducted action research contributed to improving both teaching methods and student interest.

**Research Questions:**

1. How can the learners' interest be increased in the science subject in 4th and 5th grade at Paktika primary school?
2. How can teachers be supported to make teaching the topic 'Density' enjoyable?

**Intervention:** A qualitative approach was taken for the research which adopted interviews with teachers to gain insights into their perspectives, classroom observations to understand teaching practices and administering questionnaires to students for feedback.

The research intervention involved working closely with nine teachers to incorporate innovative techniques in the classroom. Teachers received training on the use of technology in Education and student-centered teaching methods, and developing materials that would be useful for teaching. During this process, teachers observed and adapted new methods, which notably improved their teaching practices. Afterwards, teachers implemented what they had learned in the classrooms with students, which was observed by the researcher.

**Key Findings:** Despite the success, certain challenges hindered implementation, such as limited access to technology by both teachers and students. These challenges underscore the need for greater familiarity and support in utilizing technology effectively.

The outcomes of this research identified the importance of adopting modern concepts in teaching to make learning more enjoyable. Teachers and students alike gained valuable insights into modern teaching practices, including technology integration, remote learning, and online courses. Learning theories like Bloom's taxonomy were introduced, adding depth to the teaching approach. Importantly, this research not only equipped teachers with practical strategies but also instilled a sense of enthusiasm for teaching and learning science.

**Implications:** This research underscored the need for enhanced science education engagement among Afghan students. Through collaborative efforts with teachers, the study successfully introduced innovative practices and materials. The results have identified the importance of enabling teachers to inspire students' curiosity and interest in science through the methods used in the study.

**Title:** Integrating TPACK in nutrition education for improving teacher's practice in Nepal

**Name:** Pritika Basnet

**Coverage:** This research study explores the integration of TPACK in nutrition education to enhance the teaching practices of health teachers in a government school located in eastern Nepal. The research centers on five health teachers from one of the largest government schools in the Morang district of Nepal.

**Problem Statement and Significance of the study:** In the selected school, though teachers have access to the internet and technology they lack the opportunities for professional development to utilize technology in their teaching practices. Thus, this study not only empowers health teachers to embrace TPACK integration and elevate their pedagogical methods but also extends to potential benefits for other curriculum chapters beyond nutrition, such as communicable and non-communicable diseases. The research findings provide a valuable resource for educators, policymakers, and the government to devise tailored teacher training programs that effectively incorporate TPACK. The study also underscored a critical issue - despite curriculum changes promoting project-based learning, many teachers lacked the competence to execute these methods in their classrooms.

**Research Question:**

1. How do health teachers implement the knowledge gained through the workshop on "integrating TPACK in health education" to change their teaching practices while teaching nutrition lessons to grade- 7 students?

**Intervention:** The design of the intervention included four phases. First, was the observation phase where the researcher observed the classroom practices of teachers and identified issues. Second, a planning phase where professional development workshops were planned based on the issues identified in the observation phase. Third, an action phase where the researcher conducted a series of face-to-face and online workshops for teachers and they implemented what they have developed in the workshops in the classroom. Fourth and the last phase was the reflection phase, in which the teachers and students reflected on the intervention and what could be improved for the second cycle of implementation.

**Findings:** The findings identified a significant transformation in teachers' practices following the workshop series. When technology is integrated in nutrition lessons, student engagement is increased and brought positive changes to the classroom. The adoption of TPACK principles led to a shift from traditional lecture-based teaching to more student-centered and engaging approaches. The research outcomes serve as a foundation for planning and organizing various technology-driven and project-based teaching and learning sessions. This in turn not only enriches the teaching and learning practices of teachers and students alike but also contributes to the overall improvement of the education system.

**Implications:** This research highlights the potential of integrating TPACK in nutrition education to revitalize teaching practices among health educators in Nepal. By demonstrating the positive impact on pedagogical approaches, the study offered insights into effective strategies for incorporating technology, fostering inquiry-based learning, and promoting student-centered activities and thus emphasizes the importance of TPACK.



**Title:** An Action Research on Teaching Science through Technology supported Inquiry-based learning in Grade Ten

**Name:** Chandrakala

**Coverage:** The study was implemented with six teachers teaching to 10th-grade level from two schools.

**Problem Statement and Significance of the study:** In the context of Nepal (Schools of Dhangadhi sub-metropolitan, Kailali, Nepal), teachers are using teacher-centered exam-oriented teaching. While teachers are responsible for completing the course rather than focusing on students' achievements, it results in poor conceptual understanding and low academic achievement. For example NASA (National Assessment for Student's Achievement) report from ERO (Educational Review Office) and other research reports show the least achievement (Below basic 37%, Basic 26%, Proficient 1 19%, Proficient 2 11%, Proficient 3 5% and Advanced only 2%) in secondary level science. Additionally, students are not familiar with the use of technological equipment due to the location of the school and their poor economic status. However, they are very willing to use computers to access information.

The significance of this action research was to offer ways of making science and technology education more effective and solving problems in the related field. Taking into consideration the literature and the interest areas of the researchers, the inquiry-based 5E instructional model was embedded in a new framework of 4W questions ("What will I learn?", "Why will I learn?", "With what will I learn?", and "What have I learned?") and supported by instructional technologies involving specific stages with standard applications for solving problems.


The findings of the study will help the school administration and principals to make a plan for ICT integration in teaching, and to manage devices for implementation in the class. The study could also facilitate the policymakers to generate clear ideas for inquiry-based approaches in the curriculum. In addition, teachers will be able to identify the pattern of change in students' learning behaviours from the conventional learning approach to the inquiry-based learning approach using technology.

#### **Research Questions:**

1. What are the effects of the proposed technology-supported inquiry-based learning application on the science course achievements and scientific research skills of Secondary school students?
  - a. How does this application affect the student's achievements in the science and technology courses?
  - b. How do the student's scientific process skills change after the implementation?
  - c. What do the participants think about the implementation?

**Intervention:** An introductory meeting was arranged to initiate the conversation with the teachers and they were informed about the purpose and detailed information about the research. The research began with a focus on solving existing problems. The researcher and participant teachers collaborated to develop the plan and worked for one week in the school for grade 10. Teachers were trained as researchers and change agents, and power over decisions affecting all phases of the research and action was shared equitably among the partners in the collaboration. All teachers worked together to solve problems of concern to them, reflect together, develop relevant skills, increase their understanding of the same problem and create mutual support systems. Thus, a need-based workshop was conducted for the teachers before starting the implementation of an action plan in the classroom. After that the teachers conducted an intervention to 250 students of grade ten.





**Key Findings:** The key findings after the implementation revealed that students were familiar with the use of technological equipment and Phet simulation to construct circuits and demonstrate Ohm's law. Students' awareness of what, why, and what to learn included in the 5E model was increased after the implementation. Students were aware of the importance of conducting scientific research in science courses. Students' achievements in the science and technology courses after the implementation increased. The students' science achievement and scientific process skills were increased. The participants (Both teacher and students) responded that they were able to explore how technology-supported-based approaches help them to improve their pedagogical practices, scientific process skills, views, and reflection towards science, science-related questioning and technologies. They felt that the learning after the implementation was more effective.

**Implication:** The study highlighted the importance of enhancing students' scientific skills in interactive ways through the use of technology-supported inquiry-based learning in order to motivate and develop students' scientific skills.

**Title:** Implementation of the Locally Available Resources in Teaching Newton's Third Law of Motion in Grade Nine: An Action Research

**Name:** Sudarsan Limbu

**Coverage:** For this study five participants (in-service science teachers with around 175 students) were selected. The selected teachers were from the eastern part of Nepal. All schools are community schools where participating teachers have to work with low resources and low participation of students.

**Problem Statement and Significance of the study:** It is found that students are memorizing the causes and reasons of specific cases and delivering them in the examination without being involved in any activity or project. Hence, this research triggers the problems in all levels of learning environments while teaching Newton's laws of motion. The major purpose of this research is to conduct an action research with science teachers with activities using local resources to teach Newton's laws of motion. This research attempts to fill the knowledge gap, theoretical gap, and practical gap by intervening in their existing teaching-learning approach using an activity-based approach with locally available tools in teaching Newton's third law of motion.

**Research Questions:**

1. How do teachers transform their pedagogical practices through the use of the locally available materials in teaching Newton's third law of Motion in grade 9?
2. How do grade 9 students learn Newton's third law of motion meaningfully and overcome their misconceptions using the locally available materials?


**Intervention:** To train teachers, two workshop cycles were conducted. The workshop was held virtually in Google Meet by demonstrating making a newton-meter using syringes and measuring the quantity of action and reaction using scales in syringes. Regarding the workshop, all teachers responded and got some idea about the use of syringes and how they can correct misconceptions.

In the second cycle, teachers are just facilitating the activities rather than acting and describing, the students learn themselves in collaboration and through peer assessment.

Interview data was collected from both participating teachers and students. Teachers were asked to reflect on practices, experiences, values, and changes to obtain qualitative data and take evaluations from the students to get quantitative data regarding the knowledge of Newton's third law of motion.

During the intervention pre-test phase teachers acted as facilitators to make clearer about the questions if students did not understand anything. There were altogether one hundred and thirty-five participating students.

**Key Findings:** The key findings of this study revealed the transformation in the teachers. Transformation occurred through fallible hegemonic thoughts of irrevocable teaching practices into changeable ones, and where they disempower their existing practices by experiencing learning disorientation, prolonged struggle, and accommodating the new knowledge on reflecting on lived experiences. This research effectively introduced the low-cost resources which are available locally to account for action and reaction. In addition, this research was framed by Lewin's Approach to Action Research.



**Implications:** This research shows that action research is vital to transform teachers into a new frame of reference. In addition, mentoring teachers to implement all key elements of being a constructivist teacher is equally important in science education, addressing the collaborative approach, hands-on activities, and modeling by using locally available materials to provide the framework to highlight and understand in real-life settings, and reflecting on experiences which are insightful learning from this research.

## Theme 6: Language Education

### Introduction

While language education is an area that has been researched to some extent in the Maldives, limited research has been published in this area. Furthermore, action research published based on Language education is very rare (Moosa, 2018), even though there are some action research done on education in general and on other disciplines such as on social issues and nursing and health (Ashraf, 2017; Malatesta, et al, 2015; Saeed, 2022; Shifana, Evans and Bradley, 2014).

Afghanistan being a multilingual country, Dari and Pashto are the official languages of the country and most commonly spoken languages as well, with 50 and 30 percent of population respectively. Often in schools the medium of instruction is either Dari or Pashto depending on the region. Although English is taught as a second language in many schools, mostly in urban areas, the ability of English school teachers is extremely low and during English lessons, language is not limited only to English (Coleman, 2021). These teachers are unaware of the best methods and strategies in use in Language Education.

The case of Nepal is different with Nepal being a multilingual, multiethnic and multicultural country, with over 123 diverse languages which presents another set of challenges. Although governments efforts were made to implement Mother Tongue Based Multilingual Education (MTB-MLE), especially in early years of education, the practicality of implementing this is not clear (Dhakal, 2021). On the other hand, English was also introduced as a medium of instruction.


English language being the second language for most teachers in all the three countries, It is important that more teachers teaching language education need to engage in Action Research to improve their practices of language teaching and find ways of solving the existing problems in language teaching

### Summary of Action Researches

This theme discusses 11 action researches done by 11 Fellows in three countries, seven from Afghanistan, three from Maldives and one from Nepal. They cover a total of 67 schools from across the three countries, with 37, 5 and 25 respectively from Afghanistan, Maldives and Nepal. Their action researches represents schools from diverse backgrounds such as community-based education schools and government schools both in the urban as well as rural areas, covering primary and secondary schools and also private schools. The studies were done involving 64 teachers from Afghanistan, 16 teachers from the Maldives and 25 from Nepal.

The themes have been focused on the use of specific language teaching approaches and pedagogies and the incorporation of particular techniques and strategies that aim at developing the reading and writing skills of students as well as addressing the challenges of bilingual students in learning English. Their interventions varied from main approaches such as Communicative Language Teaching (CLT) to strategies such as SQ3R (Survey, Question, Read, Recite, and Review) which is particular for reading. Moreover, innovative and interactive strategies like using comic strips for developing writing skills and using story-telling were also part of these interventions.

Lack of trained teachers, especially in teaching language and similar opportunities to enhance knowledge and skills in teaching language, and as such explain the low resource settings common in these countries. In addition to this, Afghanistan undergoes the challenges of having to establish



community-based education schools in mosques etc, and the lack of library facilities, textbooks and internet facilities.

The findings of these action researches suggest that teachers lacked awareness of various methods of teaching. Interventions using problem-based learning and using CLT approaches and more interactive activities like pair and group strategies increased students' interest and willingness to learn. The move from traditional teaching methods to student-centered approaches and innovative strategies such as using comic strips had resulted in increased student motivation.

It is recommended that teachers have more professional development in implementing models and strategies in English language teaching. Even in cases where teachers had the required competencies, it was evident that teachers still required more support from the school management, as time had been a limitation in implementing lessons the way they intended.

**Title:** Teaching English subject effectively in schools located in bilingual societies of Nangarhar and Laghman Provinces of Afghanistan

**Name:** Abdulla Danish

**Coverage:** The action research was conducted at eight Community-Based Education (CBE) schools located in Nangarhar and Laghman provinces, which are located in the eastern region of Afghanistan. Through purposive sampling 10 English Language teachers were selected for the study, who teaches grade 4-6 students of age 10-14 years with bilingual background.

**Problem Statement and Significance of the Study:** CBE schools are established for the out of reach areas in community buildings or houses, sometimes in mosques for students who are unable to attend public schools due to many constraints. Teaching English to students of different native languages poses challenges to teachers. For instance, teachers struggle to identify the best methods and child-centered teaching techniques in teaching English to students of varied linguistic backgrounds. This study helps to identify the effective practices of utilizing different child-centered techniques and methods necessary for teaching English Language. Additionally, the study will contribute to the limited literature on the subject as well.


**Research Questions:**

1. What practices and techniques can be used by the teachers to teach English subject effectively in a bilingual context?
2. How does students' mother tongue (Pashto/Dari) affect the learning of English subject effectively?

**Intervention:** In the intervention, first, data was gathered through observation sessions. This was followed by data collection regarding teachers' needs via Google form. Then a two day TPD workshop was conducted as a form of intervention for teachers where they actively participated. Teachers then implemented what they have learned using language teaching aids like flashcards, signposts, charts in the classroom. Effective language teaching methods/activities were carried out like project-based learning, task-based learning, group works, silent reading, picture stories, conversations, etc. Teachers gave prompt constructive feedback to the students' learnings and students carried out many activities on their own and with great willingness. Another follow-up observation session as part of the second cycle was done to evaluate whether the research objective was achieved and gaps were addressed.

**Key Findings:** Findings indicated that teachers lack awareness of different methods despite their qualifications. However, during the intervention, teachers practised a variety of methods such as project-based learning, task-based learning, in the classroom instructions which are focused on child-centered teaching, specific to the English language instead of traditional methods. There was an increase in the willingness of students to participate in activities such as silent reading, picture stories and conversations etc. Instead of exam based feedback, the teacher provided prompt constructive feedback after activities.

The study has revealed that child-centered language teaching methods were the best pathway for teachers to utilize in language learning classrooms. Nonetheless, to effectively impeding child-centered learning in classrooms, teachers require the necessary knowledge and practice.



**Implications:** One of the most important implications of this study is the need to develop a supportive and inclusive learning environment for all students. This means fostering an atmosphere where all students feel valued and respected, regardless of their linguistic background.

In addition, it is important to consider the role of the teacher in bilingual education. Teachers in bilingual schools need to be trained in both English language teaching and English language development. They also need to be familiar with the cultural backgrounds of their students and be able to create a curriculum that integrates both English and the students' native languages.

**Title:** Empowering Teachers' Growth and Renewal through Teacher Research in Nepalese Context

**Name:** Janak Singh Negi

**Coverage:** The study was conducted with 25 in-service English as a Foreign Language (EFL) teachers teaching English at Secondary Level. The teachers were from 23 government and two private Schools, from rural, urban and semi-urban areas of the government.

**Problem Statement and Significance of the Study:** English is regarded as a foreign language in Nepal and communicating in English is treated as a very high socioeconomic status and has been taught as a subject in government schools for over 50 years. Although it is increasingly used as the primary lingua franca, there is no natural or direct exposure to the English language outside the school in remote and resource-impooverished areas. As a result, most students from government schools have difficulties in understanding and writing skills in English. Students even at the higher-level classes in the resource-poor and rural areas, struggle to communicate in English. Therefore, this study is focused on in-service EFL teachers teaching at the secondary level, in public schools to investigate the impact of teacher research mentoring support to the EFL in-service teachers in their classroom performance in the remote and resource-improvised schools in Nepal. It also indicates the challenges and barriers they face in designing and implementing teacher research, and points out the support teachers need to conduct teacher research to bring out change and improvement in their instructional practices through localized and context-specific pedagogy.

**Research Questions:**


1. How does mentoring action research support the teachers to improve their pedagogy?
2. What is the impact of research-based context-specific pedagogy in EFL classrooms?
3. What are the challenges and barriers faced by EFL teachers in designing and implementing teacher research in the EFL classroom?
4. What support do teachers need in designing research-based context-specific pedagogy for the EFL classroom?

**Intervention:** The study adopts a mixed method and data is collected through multiple means, including 25 FDGs and semi-structured interviews, questionnaires, reflective notes and from interactions during the workshops. Although face-to-face workshops were not possible due to geographical adversities, 11 workshops were conducted online for a duration of six months. The workshops were based on supporting teachers to identify the problem from their EFL classroom contexts, designing and implementing innovative/context specific pedagogy, observing and then reflecting on them, after developing action plans.

**Key Findings:** The findings of this study show that teachers developed a sense of teacher as the researcher and knowledge creators. They feel confident and satisfied as they were able to address their classroom problems. However, a large number of teachers were unwilling to conduct the research due to multiple reasons such as lack of institutional support, overloaded classes and poor time management, financial inadequacies, and lack of incentives, training, feedback, and mentoring support from the government.

The findings also indicate the necessity to build a community of teachers as the researcher in each school with adequate support from the institution and the government.





**Implications:** The findings of this study have a number of implications for practice. First, policymakers and school administrators need to create an environment that is supportive of teacher research. This can be done by providing teachers with training and resources, reducing their workload, and changing attitudes towards teacher research.

Second, teachers need to be encouraged to engage in teacher research. This can be done by providing them with opportunities to share their research with others and by celebrating their successes.

Finally, teacher education programs need to include training in teacher research methodology. This will help teachers to develop the skills they need to conduct research on their own teaching.

**Title:** Reading Comprehension of Simple Sentences

**Name:** Nasima Ahmedyar

**Coverage:** Five government high schools in Jawzjan Province of Afghanistan were selected for the study. A total of 10 teachers participated in this classroom action research to improve teaching and learning process.

**Problem Statement and Significance of the Study:** The study provides insights into the actual teaching and learning processes in inclusive classrooms. The issue of reading comprehension in schools is common and is undeniably a pressing matter that needs to be attended to. It has been a critical concern for schools because reading comprehension appears to be a unique problem that remains unresolved despite the efforts of scholars to improve the reading status of students. Hence, the findings of this study offer important information about teachers' awareness of learners' diversity in their classrooms. This information is expected to help improve teachers' practices about meeting the individual needs of learners, and to establish the need to revisit teachers' preparation.

**Research Objective:**


1. To investigate reading comprehension skills of 7th grade students, using the SQ3R (Survey, Questions, Reading, Recite, and Review) reading comprehension strategy

**Intervention:** The researcher has divided this study into two cycles, each cycle consisting of four steps: they were: planning, implementation of the action, observation, and interviews. Students' reading and comprehension levels were measured by administering a pre and post test. It was evident that students' reading comprehension skills are below average. Secondary school 7th-grade students were chosen as they should be capable of reading text. Thus, in order to improve their reading comprehension skills an action research plan was prepared. This plan was for 3 hours each week and it was implemented for 16 weeks.

**Key Findings:** The finding of this study shows teachers do not follow the techniques of teaching reading as described in Teachers' Edition, or the text books to be used in implementing the curriculum. They do not introduce new English words and do not apply chain drill techniques in teaching reading. It was also found that although teachers use pictures related to the topics they are teaching, they do not ask thought-provoking questions related to the pictures. Moreover, rather than asking students to describe the pictures, they themselves give the descriptions.

It was observed that there was a mismatch in what the teachers are supposed to do and what they implement in the classroom. Students were asked to memorise English grammar and they could not use it correctly due to lack of understanding and application. Moreover, teachers do not give chances or opportunities for slow learners to participate in classroom activities. It was also found that many teachers have the limitations of pronouncing English words correctly and poor vocabulary, this has hindered reading, writing and speaking of students.

The results of the pre and post test to assess the reading comprehension level of participants proved that the SQ3R strategy is effective in improving and enhancing students' reading comprehension. The mean percentage scores of students changed from below average of 40-45 percent to above average.



**Implication:** The findings imply the need for teachers to rely more strongly on a purposeful selection and use of reading comprehension strategies in their teaching, thus gaining valuable experiences and insights to the variety of strategies available for them to use with their students. In addition, by using a wider range of reading comprehension strategies, teachers can better recognize and fill in perceived gaps, which allows students with different learning styles to get the maximum benefits of the different teaching strategies.

To increase reading comprehension in secondary classrooms, schools must critically reflect on the quality of professional development in place. Teachers must have meaningful professional development including mentoring and coaching to allow them to see the realm of possibilities in content literacy, as explained in reading and reading comprehension text.

**Title:** How can we improve the Pashto language writing skills of the Elementary School students

**Name:** Rahmathullah (Safi)

**Coverage:** The study was conducted in three government, elementary, boys' schools in Pashto language, in Afghanistan. A total of 8 teachers took part in the action research.

**Problem Statement and Significance of the Study:** The Pashto language is one out of the two official languages used in Afghanistan, with the other being Dari. However, the issue of the lack of trained teachers to teach this subject is a drawback. Moreover, the current methodology being used by existing teachers proves to be insufficient to cater to the development of the four language skills in the language which is crucial for communicating in Pashto. Therefore, it is important to ensure that students are able to communicate clearly and concisely by writing. This study becomes significant as it tends to explore the issues relating to learning the alphabet, words, combining words and sentences and some basic activities for improving students' writing skills. Moreover, it adds value by exploring the instructions used to teach writing skills to non-native speakers. Hence, the study aims to understand the teachers' practices and students' learning about writing skills.

**Research Questions:**

1. What strategies can improve the Pashto language writing skills of the elementary schools' students?
  - a. How can teachers be provided with the knowledge and skills needed for improving the writing skills of students effectively?

**Intervention:** The action research was conducted using classroom observation for eight teachers and a pretest for students' assessment. In addition, interviews were conducted with teachers about the improving writing skills of the elementary schools' students. Data was collected through pretest and observations of the classrooms as well as interviews with the teachers after the implementation. Teacher professional workshops on this were conducted to the participant teachers.

**Key Findings:** The study results indicated that the teachers lacked professional knowledge while teaching and most of them are not able to include all the students from various backgrounds in the learning process and always use traditional teaching methods while they are teaching.

**Implications:** The results of the study imply that teachers need to be trained in using appropriate methods for teaching which could motivate and develop the Pashto writing skills of the students. Moreover, it also emphasised on the necessity for teachers to be well trained in using effective pedagogies.

**Title:** The Impacts of Think Pair Share (TPS) and Group Working on Learning English Language as a Subject in Grade Five

**Name:** Mohammad Rahim Morawat

**Coverage:** The study is conducted with nine teachers from six government schools in the Karti-e-now area of Kabul city, Afghanistan.

**Problem Statement and Significance of the Study:** The education system of Afghanistan has been in a drastic state due to the prevailing political situation in the country. Access to qualified teachers and up to date methods, good textbooks, and other necessary educational requirements or materials have been thus challenges to the teaching and learning. Therefore, in order to overcome the challenges, creating an effective learning environment is very necessary. Teachers need to be made more aware of the learning process and ways of adopting methods and strategies as that will help teachers in adaptation of different methods in order to respond to the diverse styles of learners.

**Research Question:**

1. What will happen to students' learning outcomes, when the teacher uses TPS and group work methods in teaching grade five English language?

**Intervention:** The action research encompassed a preliminary phase of teacher observations within the chosen school, conducted as a means of gaining deeper insights into the instructional methods employed and the strategies utilised in student education. Subsequently, a teacher professional development session was organised, during which educators received comprehensive training in the utilisation of Think-Pair-Share and group work strategies. Following this training, teachers proceeded to formulate and execute these strategies within their classrooms. To supplement our data collection efforts, interviews and FDG were employed, involving both teachers and students. This iterative process was repeated across two distinct cycles, facilitating an assessment of the effectiveness of the strategies imparted to both teachers and students.

**Key Findings:** The findings revealed that using these strategies benefited the students' learning in several ways. They had proven to increase students' engagement and confidence in their learning through the pair and group work strategies. Furthermore, more interaction resulted in becoming more fluent in thinking and reduced time spent on thinking. They were also seen to manage their ideas more effectively and even the shy students had outgrown their shyness and been more comfortable in their discussions with others. Furthermore, this increased motivation and willingness to participate had resulted in better cooperation among students.

**Implications:** Based on the aforementioned discoveries, the researcher recommends a heightened incorporation of activities centred around think-pair-share and group work strategies within English textbooks and instructional pedagogies, with the overarching aim of enhancing students' academic performance. It is imperative to underscore that the absence of both libraries and internet resources within the school environment, coupled with a dearth of textbooks and inadequate language-specific teacher training, accentuates the urgency of these recommendations.

**Title:** Using Comic Strips and Writing Process Method to Develop Creative Writing Skills in English Language among Key Stage 2 Students in Maldives

**Name:** Fathimath Muna

**Coverage:** This action research was conducted in the largest public school in Hulhumale, Maldives, situated in a suburban area. Grade 6 was chosen as the target group because students at this stage are expected to produce longer creative writing pieces, employing a diverse vocabulary and appropriate grammar usage to enhance meaning. The research specifically targeted Grade 6 English Language teachers who were responsible for guiding and assessing the students' creative writing development. As there were a total of 8 classes in grade 6, the total number of participants is 8, as all the teachers participated in this study.


**Problem Statement and Significance of the Study:** English is widely used as a second language for communication in the Maldives, where the education system relies on English as the medium of instruction from kindergarten to Higher Secondary level. The challenge of creative writing proficiency among second-language learners is evident, with students struggling to convey their ideas effectively in writing. This deficiency in writing skills appears rooted in both the students' lack of structural knowledge and the teachers' potential limitations in fostering writing abilities. This issue may stem from inadequate teacher training and a tendency to rely on conventional teaching methods. Additionally, the COVID-19 pandemic has exacerbated this decline in writing standards, exacerbating the need for intervention. Given the dearth of contextual literature, addressing this issue is imperative, as it directly impacts students' English language performance in higher grades. This study will enhance our comprehension of creative writing in the context of second language learning. Its findings will enrich current literature, offering a unique perspective within an English-medium educational system that assesses students via international exams. These results will empower educators to employ internet-accessible comic strips as an innovative tool for teaching creative writing.

**Research Question:**

1. How does the writing process method using comic strips help to develop creative writing skills in English among students of key stage 2?

**Intervention:** The intervention involved using the writing process method, comprising five stages, along with comic strips to enhance creative writing skills. Comic strips and cartoons were effective teaching tools engaging students in meaningful learning experiences. A Training of Trainers (ToT) model was used to equip teachers with the necessary skills. The research employed quantitative and qualitative methods to assess the intervention's impact on students' creative writing skills.

**Key Findings:** The key findings of this action research indicate a significant improvement in students' creative writing skills as measured by pre-test and post-test scores. A comparison of the average scores from both tests revealed a noticeable enhancement in creative writing abilities among students. This improvement was evident when analysing the scores at the class level, indicating a collective progress in creative writing skills. The quantitative data suggests that the utilisation of the writing process method with the inclusion of comic strips is an effective approach for developing students' creative writing abilities. The qualitative findings of this action research revealed three key themes: students' involvement in the teaching and learning process, students' motivation to write using comic strips, and students' writing achievement. These themes were supported by excerpts from interviews with teachers and reflections from students. The findings indicated that students were highly active and eager to learn during the teaching and learning process, which differed from their regular writing lessons.



Teachers also noted a high level of motivation and enthusiasm among students when presented with PowerPoint slides and were excited about completing the tasks given. Some teachers even observed students bringing their own comic books to class, indicating their interest and motivation in the subject. The quality of the writing produced by students was reported to be different, with students being more expressive and feeling a sense of achievement in their work.

Not only teachers, but students also highlighted the benefits of the writing process method, including structuring their writing, identifying and correcting their own mistakes, and experiencing a flexible process. Moreover, features of creative writing, such as the use of expressive words had enabled them to better express themselves.

**Implications:** In summary, the combination of comic strips and the writing process method effectively enhanced students' creative writing skills. This intervention not only demonstrated significant improvement but also positively influenced students' interest, motivation, and engagement in the learning process. Additionally, it was found to be effective in developing the creative writing skills of 6th-grade students.

**Title:** Use of Communicative Language Teaching Approach to Improve Maldivian ESL Learners' Speaking Competence

**Name:** Hidhaya Mohamed Zahir

**Coverage:** Five key stage 2 language teachers from 3 public primary schools in the capital city were selected for this study.

**Problem Statement and Significance of the Study:** Although *Dhivehi* is the official language of the nation, English is widely spoken and is considered vital for the Maldivian students to learn. English is used extensively throughout the Maldives and has been the medium of instruction in schools from Key Stage 1 to 5. However, students still lack the confidence needed to participate in class discussions, debates and presenting their ideas. Many English language students exhibit hesitancy and resistance in the classroom. This may manifest itself in a variety of ways, including a reluctance to participate in class discussions, a lack of confidence in one's English communication skills, or a choice to refrain from using English outside of the classroom. This problem may be the result of a variety of factors, including pedagogical, cultural, and linguistic.

A wide range of stakeholders, including teachers, teacher leaders, policymakers, and the Maldives Ministry of Education can benefit from the study's findings. By identifying the barriers to CLT implementation and the strategies that can help overcome them, this study can enhance their comprehension and offer them assistance in encouraging effective CLT adoption in classrooms. Studies on language acquisition typically concentrate on the difficulties experienced by students rather than assessing the efficacy of CLT as a methodology. The Ministry of Education will benefit from the study's findings since they could offer advice on how to help teachers overcome obstacles to CLT implementation. By addressing these challenges and improving the efficacy of CLT, teachers can provide learners with more effective language education.

**Research Question:**

1. How effective is CLTA in enhancing Key Stage 2 ESL learners' speaking competence?

**Intervention:** Purposive sampling was used to identify the language teachers. During the project's initial phase, English language teachers received professional development training to equip them with the skills necessary to put the CLT technique into practice and encourage student involvement in speaking activities. And the teachers were asked to develop lesson plans based on the intervention strategy by using CLT techniques like pair, group, discussions, presentations and role plays. A variety of techniques were used to collect the data for the study, including field notes, classroom observations, lesson notes reviews, and one-on-one interviews with participants.

**Key Findings:** The results indicated that the CLT Approach's authentic classroom activities, pair work, group work, and roleplays significantly contribute to the development of a communicative environment by student's numerous opportunities to interact socially and develop their speaking ability. Also, the CLT technique dramatically improved students' speaking abilities especially those who are shy and introverted, when they were given opportunities to speak with their classmates. The study's findings indicate that the CLT method is a highly effective method for enhancing students' speaking abilities, especially students' desire to participate and communicate in class. The findings also show that the CLT method has significantly improved students' vocabulary, grammar, and fluency as well as their confidence to speak in front of their peers.

**Implications:** The study's findings have significant implications for English language teachers who aim to use the CLT approach to promote effective communication for ESL learners. Furthermore, the findings hold important implications for English language teachers and educational institutions and provide several avenues for further research.



**Title:** Improving argumentative writing skills of English as a Second Language students using Toulmin's model: An action research in a Maldivian secondary school

**Name:** Mohamed Umar

**Coverage:** The study is based in a Maldivian secondary school located on a rural island, and includes participation of five ESL teachers

**Problem Statement and Significance of the Study:** This action research delves into enhancing the argumentative writing skills of ESL learners through the application of Toulmin's model. The significance of this study is twofold. Firstly, it aligns with the National Curriculum Framework's emphasis on incorporating critical thinking skills into every subject, including ESL. Secondly, it addresses the practical concern of students transitioning to higher education institutions, who often lack effective argumentative writing skills.


**Research Questions:**

1. How is argumentative writing skill currently taught by the selected teachers in the study?
2. How can the selected teachers improve argumentative writing skills of their ESL learners by using Toulmin's model of argumentation?
3. What challenges might the selected teachers face in using Toulmin's model of argumentation to improve their ESL students' argumentative writing skills?

**Intervention:** The research intervention adopted a qualitative research design, involving the participation of five experienced ESL teachers, each possessing a minimum of three years of experience in the field of Maldivian ESL education. Data collection methods employed in this study comprised FDGs, classroom observations, individual interviews, the compilation of field notes, the collection of samples of students' writing, and the administration of a teacher readiness survey. Notably, this research was conducted in two distinct intervention cycles to comprehensively explore the subject matter. During the first cycle, a session was conducted for teachers which explained the utilization of Toulmin's model.

**Key Findings:** Key findings shed light on the prevailing teaching methods. The teachers employ a process-oriented approach, initiating writing lessons with pre-writing activities. Time constraints, however, frequently relegate the drafting process to homework. Teachers use templates with guiding phrases to scaffold writing, aiding in structure and cohesion. Toulmin's model, when introduced, positively impacts argument structure and quality. It prompts students to think critically, employ relevant evidence, address counterarguments, and enhance coherence. Furthermore, the approach stimulated students' motivation for critical thinking and argumentative writing.

Challenges identified during the research included time limitations resulting from large class sizes and mixed ability levels. These constraints hindered teachers from providing timely guidance and addressing individual needs. Students' lack of reading habits was also identified as a challenging factor when it comes to their learning.



**Implications:** The implications of this research underscore the efficacy of Toulmin’s model in improving the argumentative writing skills of ESL learners, particularly in terms of enhancing cohesion and argument quality. These findings hold notable advantages for in-service teachers, as they provide insights to enhance their pedagogical approaches in teaching argumentative writing.

Furthermore, the identified approach serves as a valuable self-improvement tool, benefiting both students and teachers, particularly in resource-constrained environments. To achieve optimal results, it is imperative to provide proper training to teachers in the utilisation of Toulmin’s model, both for their own writing practices and for effective student instruction. Ultimately, this study contributes significantly to the enhancement of ESL teaching practices, empowering educators to effectively nurture students’ competence in argumentative writing.

**Title:** How Storytelling Impacts English Speaking in Grade Six of Nangarhar Girls' Primary Schools

**Name:** Nigena Sadat

**Coverage:** This research focuses on the implementation of storytelling as an innovative method to improve spoken English skills in 7 Community-Based Education (CBE) schools across diverse districts in Nangarhar province, Afghanistan. The study involves 10 teachers and 6th-grade female students.

**Problem Statement and Significance of the Study:** In Afghanistan, many English language teachers are unaware of the importance of speaking English, thus, do not fully utilise it for solving problems. Furthermore, they do not have the knowledge of proper teaching methods. Therefore, the significance of this research is high since it is a novel area of implementing storytelling for spoken English, which is noted to be an unexplored approach in Afghan schools. This method holds potential to enhance students' speaking abilities and engage their attention effectively. The practical significance emerges from the potential of storytelling to expand vocabulary, motivate students, and foster creativity in language construction. Due to lack of time and lack of facilities such as electricity the researcher was not able to use ICT tools so the resources used were white board, markers and charts. Additionally methods which we used are lecture method, Role play method and group working method.

**Research Questions:**

1. What challenges do the teachers face during the implementation of the storytelling method?
2. How can we apply storytelling in the classroom to enhance the speaking skills of teachers?
3. What are the impacts of storytelling on spoken English?

**Intervention:** The research employed a qualitative methods approach involving interviews, classroom observation and questionnaires, although limited internet and electricity access presents a challenge. Obstacles in the educational landscape, particularly socio-political factors discouraging girls' education, underscore the need for innovative approaches to teaching. The training sessions for teachers covered areas such as brief overview of action research and mentorship, storytelling methods, usage of teaching material for English learning, methods of English learning, students' engagement in daily activities and use of ICT tools. Teachers then used storytelling in class to enhance students' speaking skills.

**Key Findings:** The findings underscore the positive impact of storytelling. Grammar skills, vocabulary acquisition, and comprehension of language structure improved as students engaged with the narratives. Notably, students' participation in storytelling enhanced their vocabulary and enriched their language skills. Other innovative practices that were adopted during the study included, utilizing movies and cartoons to enhance speaking, vocabulary, and grammar skills, promoting conversation partners for interactive practice, engaging students through practical lessons, with storytelling as an effective tool, utilizing attractive storybooks with colourful images to captivate student interest and enhancing students' understanding of reading and empowering them to narrate stories confidently.

**Implications:** This research, conducted as a unique experience in Afghan education, utilizes action research to bridge gaps in teacher capacity building and student engagement. The findings and innovative practices arising from this study offer promising implications for enhancing English language learning in challenging contexts.

**Title:** Implementing Communicative Language Teaching (Role-Play) Effectively in English Language in Grade 6 of Girls' Schools in Kabul Province

**Name:** Mariam Gafoorya

**Coverage:** This research was conducted with seven teachers from five public schools in Kabul city, capital of Afghanistan. The five schools were all under the supervision of the head of the Kabul education directorate. Though these schools are in Kabul city and in a well-known area, still the schools' settings are not good. These schools lack resources and materials. Lack of professional teachers is another challenge for these schools.

**Problem Statement and Significance of the Study:** The use of CLT (role play) in the Afghan context is less, especially in schools. Traditional teaching methods are preferred more. No such action research has been conducted in the Afghan context so far. The main focus of this study is the lack of application of CLT (role-plays) approach in schools exclusively in 6th grade classes. One of the reasons for this issue is because students do not have the chance of practising the target language in class. Although teachers might have the knowledge of CLT, when it comes to implementing, it is found that teachers cannot connect theory with action.

Through this study teachers will be able to increase the knowledge and awareness of English school teachers in using a CLT approach in the English classes. Furthermore, the results of this investigation could be highly significant and beneficial for the students who will experience role-plays as a tool to enhance their English communication. Similarly, since this study is an action research, the teachers will use this approach practically and will experience a new solution for the problems in their teaching practice. The teachers could share the result of this study with other colleagues as well.

#### **Research Questions:**

1. How do we help teachers with the knowledge and skills needed for CLT (role plays) in English Language effectively in grade 6 of 5 girls' schools in Kabul province?
2. How can Role play be implemented effectively? Does implementation of CLT (role play) in grade 6 of girls' school in Kabul province enhance students' speaking skill?
3. What is the perspective of teachers toward role-play implementation?

**Intervention:** First the researcher met with the teachers and introduced the action plan for the study. The initial data was collected through interview and observation which could be used for need analysis. For the need analysis three tools were developed: an interview instrument, an observation form and reflection notes. Followed by the need analysis, a three-day TPD workshop for the teachers was conducted to provide knowledge on CLT (role play). This workshop consisted of useful insights about reflective teaching, action research, reflection writing, teaching methods, CLT approach, role-plays, lesson plan for role-plays, and games for communication. In the first cycle researcher used the observation form to collect information about the teaching and took pictures and videos for data analysis and lesson plans. In the second cycle, researcher used field notes along with pictures and videos for data collection at the end of the teaching intervention. Some teachers wrote reflection and had a post conference with the teachers so that they could share their experience of teaching.

**Key Findings:** The findings of the study revealed that teachers believed that teaching methods help them reach their goals. They believed that with the help of teaching methods, they convey their knowledge. Mostly the teachers used teaching methods such as oral method, written method, question and answer, lecture, student-centered approach, and group work. Additionally, Teachers' knowledge about CLT, techniques of CLT, and role-play increased. The teachers knew that this

approach was related to communication however they did not have enough knowledge about the kind of teaching strategies that are used. Regarding role-plays, the teachers have used role-plays in their classes but have not considered it as a tool for enhancing the speaking skill of students.

The findings also revealed that the action research benefits the teachers who want to enhance their students' speaking ability. A big change is observed in the interaction and speaking of students. Teachers gained confidence to speak in English and did not fear making mistakes. The teachers wrote lesson plans and were also able to practise reflection. The teachers also gained information about action research and mentorship.

**Implications:** The study suggests that storytelling can be an effective way to support English language learning. This is because storytelling provides students with opportunities to practice their listening, speaking, reading, and writing skills in a meaningful and engaging context. Moreover, storytelling can be used to create a more inclusive and culturally relevant learning environment for students. This is because storytelling can be used to teach students about different cultures and perspectives, and to help them develop their own cultural identities.

**Title:** How to Improve Pashto Writing Skill

**Name:** Ibrahim Barial

**Coverage:** In this research project, 10 teachers from two government official schools in Sarubi District of Paktika Province were selected.

**Problem Statement and Significance of Study:** The situation of teachers and among those who come to TTC for training, most of them have difficulty in making the students write or strengthen their writing skills in the elementary period. None of the teachers have a degree in Pashto literature, and most of the teachers who taught Pashto had studied chemistry. Though teachers were teaching Pashto subjects, they neither had knowledge of proper teaching methods nor they participated in any workshops or seminars. Moreover, due to lack of access to technology, teachers and students lacked knowledge on the use of technology in classroom teaching and learning. Although technology is used for daily communication, there were minimal activities on students' WhatsApp, Telegram and Messenger groups even among those who had access, for the purpose of solving the problems of their lessons, as well as practical work. This study is significant in improving the writing skills in pashto language, specifically in Paktika.

**Research Questions:**

1. What are the reasons students can not write correct spelling (hand writing)?
2. What should be done so that students can write correctly (under 6th class)?

**Intervention:** There were teachers and mentors, so in the end, we organised a two-day workshop together with the selected teachers. There were more than 70 students studying in the selected schools, many of the students had five or six Pashto books in the whole class and the rest of the students did not have any books and used A4 sheets.

In the first step, a checklist was used. The positive and negative points of teachers and students were recorded in a notebook in addition to the checklist. The teachers only spoke their own words while teaching the Pashto language. They didn't ask the students to write any lines or words on the whiteboard. The researcher made a questionnaire for the students to write the alphabet of Pashto language, and to identify which letters of Pashto language are close to the written form. They also did not have the answer because it was not shown to them. With the help of good practice the researcher was able to reach the intervention goals.

**Key Findings:** The findings of the intervention revealed that during the course of teaching, teachers had used conventional teaching methods and it did not have a very good effect on education. ICT is now accessible to a small percentage in Afghanistan, especially in Paktika. They have been using ICT in getting to know each other, providing workshops to teachers and increasing their experience and knowledge on how to improve students' writing skills in Pashto so that students can write correctly.

The only thing that the researcher should have done but we could not, is hold regular meetings with the teachers and students so that it would have been easier to observe the positive changes in the teachers and students.

**Implications:** The study implies the importance of providing explicit and systematic spelling instruction. Educators should make sure that students are taught spelling rules and patterns in a clear and organized way.

The study emphasizes the importance of giving students opportunities to practice spelling in different contexts. Educators should create a variety of activities and exercises that allow students to practice spelling words.

## **Section III: Conclusion**

### **Gender Equity and Social Inclusion**

Gender inequity and social exclusion are serious issues that affect education for all in the South Asia context. Hence, participants in the SATE Fellowship placed specific emphasis on the issues of gender equity and social inclusion in the education systems of the participating countries, and five research fellows focused on this theme for their action research. The two research fellows from Maldives highlighted the risk of reinforcing gender stereotypes within the school education environment, which may be a product of the teachers' own unconscious gender perceptions. The gendered approach may begin as early as preschool and continue through secondary school. The researcher sensitized teachers to how their own gender perceptions may colour the way they communicate with girl and boy students, and alerted them to the need for more gender neutral communication and choices for school children. In Afghanistan, though gender inequity in education is a serious policy level problem, it was not addressed due to the sensitivity around the subject of gender among the group in-charge of the government. The focus of the Action Research of two Afghan research fellows therefore, was on inclusion of all children in class activities irrespective of ability level. The Fellow in Nepal explored the problem of sustaining the attention of preschool aged children in learning activities. In both Afghanistan and Nepal research fellows worked collaboratively with teachers to identify classroom strategies to engage all students and enable learning in an equitable manner.

### **Math Education**

Math Education action research was conducted in two countries - Afghanistan and Nepal. In both countries, the research focused on making teachers aware of the conceptual underpinnings as well as the resources that can support students' learning of the conceptual ideas. Collaborative action research helped the teachers in learning from each other while also being able to contextualise the ideas in the individual teachers' classroom. The action research on fractions utilised the locally available materials in the classroom and cutting them in making different parts. The afghanistan teachers also used the materials available around schools to provide hands on opportunities

### **Open Educational Resources**

There is a need to improve access to quality education in the Global South, by enabling the use of learning materials that are free, easy to access and of high quality. Use of OER supported educational practices and promoting quality and innovation in teaching-learning in low resource contexts are faced with challenges related to infrastructure, quality resources, funds, training of teachers and technology.



SATE Fellowship provided the fellows with an opportunity to engage in collaborative practice based Action Research with a group of 5-10 teachers to adopt innovative teaching-learning practices in low resource contexts. Across the 5 Action Research studies, some of the teachers adapted OER like PhET Simulation and OLABs for science teaching while others used PBL approaches for both science and social studies. These new alternative student centric pedagogical approaches were found useful for supporting student learning through active exploration, increasing student interest and engagement and provided professional development opportunities for teachers.

This calls for orienting both teacher educators and teachers on the OER (especially locally available resources) and how these can be used to enhance science teaching-learning practice and promote adoption of more learner centric strategies, through both pre-service and in-service institutions.

## **Peace Education**

In the Global South, where culture is diverse and rich, consisting of many religions, races, ethnicities and minority groups, conflict is inevitable. Conflict can be healthy and constructive while this can also lead to many unprecedented situations and crimes at the same time. Thus, there is the need for maintaining harmony and to ensure peaceful living environments for everyone. Therefore, advocating the required knowledge, skills and values essential for peacebuilding becomes a necessity for the South Asian countries. Hence, this can be best addressed through the schools and educational institutions in the region.

The action research done on peace education was conducted by four fellows from Maldives. They collaborated with teachers in the schools to use language teaching as a tool through which these values can be inculcated in the students. As such, storytelling and poems were used to instill empathy among students. The five Cs framework and SEL strategies were also tried out for this purpose during their action research.

## **Science Education**

Afghanistan, Maldives and Nepal are among the low-resource countries from the Global South, and education being one of the main agendas for development and prosperity, each of these nations faces a lot of challenges with regard to resources for teaching and learning. Despite the inquiry nature of the subject science, teachers are unable to develop the required scientific skills in the students due to unavailability of infrastructural facilities such as laboratories and also chemicals required for the experiments. Moreover, the teachers' lack of competency in utilising various scientific approaches while teaching was found to be one major drawback.

The action research conducted across the science theme calls for serious changes in pedagogies used in classrooms in Afghanistan, Maldives and Nepal. Schools in these countries face serious challenges in terms of their low resource settings, such as infrastructure, human resource, technology and training. Therefore, there is a need for professional development training on contemporary and innovative teaching methods and techniques specific to these themes.



## Language Education

The countries in the Global South consist of large and diverse populations and thus have hundreds of languages they speak in these regions. Although English is the lingua-franca of the world, it is the second language for the inhabitants of these three countries. Thus, doing action research on this aspect of education was very much essential and relevant for the fellows of the MATPD project as issues relating to these had surfaced from the initial desk reviews done in the three countries.

The action research on language education focused on developing the four skills (Reading, Writing, Listening and Speaking) and English language as a whole. Interventions of Action Research had shown that students required more interactive and student-centered instruction to learn English more efficiently and to be able to apply them in their real life situations. Therefore, it is evident that shifts are required in the pedagogies adopted by teachers in all three countries.

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# Action Research Presentations

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<https://is.gd/mESXMP>



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## Nepal

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