Pu
blic

Beliefs, Attitude, Skills and Knowledge Study

Afghanistan Report

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

Swedish Committee for Afghanistan, Afghanistan
2024

Supported By

AFGHANISTAN RESEARCH TEAM

Mr. Mohammad Tahir Ismat (Co-Principal Investigator)

Mr. Mohammad Sadiq Dehzad (Project Coordinator)

Mr. Charles Olaka Kesa (Senior Education Specialist who participated till March 2022)

Mr. Anwarullah Sadat (Senior Education Officer/Research Team Member)

Ms. Zulaikha Rafiq (Consultant)

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

ACKNOWLEDGEMENT

We would like to sincerely thank everyone who contributed significantly to the development of the BASK study in Afghanistan. Our sincere gratitude is extended to the Swedish Committee for Afghanistan (SCA) Education Programme in Kabul Management and Regional Management Offices for their support in the fellowship programme implementation and conducting of the BASK study.

A particular thanks goes out to Dr. Osama Qamar from TIS for his support in quantitative data analysis for the BASK study, as well as appreciation to Mr. Sangay Jamtsho, the senior project officer with the IDRC for his valuable feedback throughout the project.

Without expressing gratitude to the consortium members and all the research participants—fellows, field mentors, and academic mentors—who took time out to provide support to the fellowship programme well implementation and in conducting the BASK, the report would not be complete. A special thanks to the International Development Research Centre (IDRC) and GPE KIX for providing the funds for this research project.

Table of Contents

AFGHANISTAN RESEARCH TEAM 2
ACKNOWLEDGEMENT 3
ACRONYMS 6
EXECUTIVE SUMMARY 9
Main Findings 10
Section I. 13
1.1 The MATPD Consortium 13
1.2 Introduction to the MATPD Project 14
Project Specific Objectives 14
Project Research Questions 14
Project Activities 14
The main activities of the project 16
Expected Outcomes 16
The leadership team for the MATPD project 19
1.3 Introduction to BASK Study 19
1.4 The South Asian Teacher Educators (SATE) Fellowship Program 20
I. Recruitment and onboarding of fellows 21
II. The Fellowship Program 21
1.5 Theory of Change 26
1.6 Overview of the Research Report 27
Section II. 28
RESEARCH METHODOLOGY 28
2.1 Research Questions 28
2.2 Data Collection 28
2.3 Data Cleaning 29
2.4 Data Analysis 29
2.5 Demographic Profile of Fellows 31
Section III. 33
FINDINGS 33
3.1 Understanding of MATPD 33
3.2 Teacher Professional Development (TPD) 34
3.3 Action Research 38
3.4 Mentoring 42
3.5 Social Learning (includes PLCs & collaboration) 48
3.6 Reflection 52
3.7 Information Communication Technology (ICT) 54
3.8 Gender Equality and Social Inclusion (GESI) 58

3.9 Teaching and Learning Practices..... 63
Section IV..... 65
4.1 Discussion 65
4.2 Implications..... 66
4.3 Conclusion..... 68
4.4 References 71
4.5 Appendix..... 72

ACRONYMS

ACU	Association of Commonwealth Universities
AM	Academic Mentor
APQN	Asia Pacific Quality Network
AR	Action Research
B.Sc.	Bachelor of Science
BA	Bachelor of Arts
BASK	Beliefs, attitude, skills, knowledge
CETE	Centre of Excellence in Teacher Education
CL4STEM	Connected Learning Initiative for STEM Education
CLIx	Connected Learning Initiative
COP	Communities of Practice
DFA	De Facto Authority
DTL	Distance Teaching and Learning
EDWG	Education Working Group
ERC	Educational Resource Centre
FM	Field Mentor
GESI	Gender Equality and Social Inclusion
GPE KIX	Global Partnership for Education Knowledge and Information Exchange
IAU	International Association of Universities
ICT	Information and Communications Technology
IDRC	International Development Research Centre
IGNOU	The Indira Gandhi National Open University

INQAAHE	International Network for Quality Assurance Agencies in Higher Education
INSET	In-Service Teacher Education Training
ITE	Integrated Approach to Technology in Education
KMO	Kabul Management Office
LMS	Landscape Mapping Study
M&E	Monitoring and Evaluation
M.Ed.	Master of Education
M.Phil.	Master of Philosophy
MA	Master of Arts
MATPD	Multimodal Approach to Teacher Professional Development
MHRD	Ministry of Human Resource and Development
MoE	Ministry of Education
NESP	National Education Strategic Plan
OER	Open Educational Resources
PD	Professional Development
PLC	Professional Learning Communities
RBA	Rights Based Approach
RF	Research Fellow
SATE	South Asian Teacher Educator
SCA	Swedish Committee for Afghanistan
SESP	School Education Sectoral Plan
SIDA	Swedish International Development Agency
TE	Teacher Educator

TED	Teacher Education Directorate
TED	Teacher Education Directorate
TEMP	Teachers Educators Masters Programme
TISS	Tata Institute of Social Sciences
TLC	Teacher Learning Cercle
TLP	Teaching-Learning Processes
TPD	Teacher Professional Development
TTCs	Teacher Training College
UNESCO	The United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Children's Emergency Fund
VC	Villa College

EXECUTIVE SUMMARY

The A Multimodal Approach to Teacher Professional Development (MATPD) project innovative model of continuous professional development aims to influence policy, practice, and further research in distance Teacher Professional Development (TPD) in South Asian countries. It was implemented in Afghanistan, Maldives and Nepal from May 2021 to November 2023 drawing on TPD strategies developed and implemented in India, by the Centre of Excellence in Teacher Education (CETE), through its Connected Learning Initiative and Integrating Technology in Education Projects. MATPD was led by Villa College, Maldives with CETE, Tata Institute of Social Sciences as technical lead and implementing partner for Nepal, and the Swedish Committee for Afghanistan (SCA) as implementing partner in Afghanistan.

A cohort of 15 Research Fellows (RFs) from across eight provinces of Afghanistan participated in the Fellowship, including teacher educators, and teacher education officials from the Ministry of Education, and master trainers in SCA. The selection of fellows ensured inclusivity both with regard to gender and location (urban/remote locations), and ethnic diversity. Together with the fellows from Maldives and Nepal, Afghan fellows participated in multi-modal professional development activities to build their capacities and leadership skills as teacher educators including (a) distance education courses on ICT, mentoring and action research, (b) practice based action research done collaboratively with teachers with support of a field and an academic mentor assigned to each fellow, (c) enrichment webinar sessions to support fellows with their action research study, (d) social learning through interactions on online groups using telegram or Whatsapp. Face-to-face workshop sessions, and virtual reflection sessions and interactions with core consortium team members provided them additional support during the fellowship program.

Afghan fellows selected one of six themes (language education, math education, science education, peace education, open educational resources, GESI) for their action research study, and worked in collaboration with 5 to 10 teachers spread over multiple schools, to address specific issues related to the theme in their context. An academic mentor and a field mentor was assigned to each fellow, to provide technical and contextualization support as needed, for implementing their action research within schools. The fellows were mentored by their academic and field mentors for conducting their research, and in turn, mentored participating teachers to help them address areas needing improvement in teaching and learning in the classrooms.

Fellows participated in a BASK research as respondents to a mixed methods study involving baseline and end-line surveys and interviews. Their responses were used to measure the change in their knowledge, skills behavior and attitude, resulting from their participation in the intervention, and to identify barriers and levers for enabling

distance learning methodologies that can be used for scaling the MATPD model within their specific contexts. Surveys were administered online as google forms, and interviews were conducted face-to-face and online by a team of field mentor and SCA project team. Post data collection, the data was transcribed, cleaned and analyzed. The qualitative data was analyzed using a deductive analysis approach while the quantitative data was analyzed using descriptive statistics followed by an inferential analysis method.

Research Questions

1. What are the beliefs and attitudes of the fellows with respect to the use of ICT, Action research, and mentoring for supporting TPD? What are changes in beliefs and attitudes as a result of participation in the fellowship?
2. What is the level of confidence among the fellows in the skills and knowledge required for the use of ICT, Action Research, and mentoring for supporting TPD? What is the change in skills and knowledge of the fellows as a result of fellowship participation?
3. What are the levers and barriers for supporting pedagogically rich distance learning methodology for scaling an innovative TPD model?

Main Findings

In the course of the fellowship, Afghanistan research fellows understood the purpose of the MATPD, and their own role in it, and recognized the significance of the various components of the fellowship.

Research Fellows developed a broader and more comprehensive understanding of teacher professional development and concluded that there was need to adopt a combination of different modes of TPD, to respond to needs in specific contexts, which could include mentoring, action research, collaborating with peers and experts in professional learning communities, or learning from experts online, in addition to the more commonly practiced mode of formal training workshops.

Afghanistan fellows, who had no previous research experience, learned how to conduct action research on a theme of their choice, and were introduced to writing research proposals, developing data collection tools, collecting and making sense of data, and mentoring and taking action to correct issues and improve teaching and learning experiences, collaboratively with participating teachers.

Mentoring was an important area of professional development for the Afghanistan fellows, who learned it both from their experience of being mentored by their academic

and field mentors, and from mentoring the teachers they supported during their action research. A number of them said they learned the qualities of a good mentor from the behavior and actions of their own mentors.

Social learning was another important mode promoted in the MATPD. Afghanistan fellows interacted reasonably frequently among their own cohort and with their field mentors, but were less successful in using the opportunity to benefit from interactions with their peers in other participating countries or even sometimes, from their academic mentors. The main barrier was diffidence because of language inadequacy to communicate in English. Some Afghanistan fellows used the help of their field mentors as translators, to communicate with their academic mentors, and to understand their technical advice. Other issues that limited interactions with research fellows and experts in India, Nepal, and Maldives were irregular power supply and frequent interruptions in internet connectivity.

Research fellows in Afghanistan learned the importance of regular and targeted reflection for teachers and teacher educators to identify problems and gaps in their activities, and to devise solutions that improved the teaching and learning experience.

ICT was used extensively by research fellows to attend webinars and online instruction sessions, as well as for communicating with mentors and teachers for their action research projects. Many RFs were new to a number of ICT applications, and learned how to benefit from them in the course of the fellowship. They also learned how to do a literature review for their research. They recognized the importance of ICT use in advancing education, and for keeping updated by new developments by learning from experts, as well as for communicating with other professionals. However, the infrastructure needed for widespread use of technology for teaching and learning, and even for TPD is inadequate at present, and a number of fellows felt in-person interventions worked better in their specific context.

Gender equity and social inclusion was also an important theme addressed by the project. Unfortunately, in the context of Afghanistan, schools have ‘temporarily’ closed their doors for girl students beyond grade 6 for the past two years. ‘Gender’ is not a discussion topic entertained by the De Facto Authority, and is considered an invention of Western thought, and is therefore, taboo. Exclusion is evident countrywide, and needs to be resolved at the earliest. In light of this situation, female fellows could only work with primary level teachers, since as women, they were barred from working with male teachers who teach secondary level classes of boys. Other forms of exclusion observed among students were exclusion based on learning ability and language or ethnic difference. Physically and mentally challenged children also frequently face exclusion due to various factors such as poverty, lack of accessible facilities and

resources, low awareness of parents, and lack of teachers trained to teach children with special needs.

Section I.

1.1 The MATPD Consortium

The project, A Multimodal Approach to Teacher Professional Development in Low Resource Settings (MATPD) is a collaborative endeavor. A South-South collaboration of higher education institutions and a global non-profit entity, the consortium is addressing the poor quality of teacher professional development for distance teaching and learning through this project. Villa College (VC), Maldives is the lead partner of the consortium. The Tata Institute of Social Sciences (TISS) is the co-lead and knowledge partner for the proposed innovation; while the Swedish Committee of Afghanistan is the third partner, implementing the project in Afghanistan. The learnings from TISS's award-winning and globally recognized initiatives on Teacher Professional Development (TPD) developed in and for under-resourced and developing contexts will be adapted, piloted, and researched in Afghanistan, Maldives, and Nepal.
Villa College is the first and largest private higher education institution in the Maldives offering a variety of academic programmes. The teacher training programs offered by Villa College at the Faculty of Educational Studies are known to be popular. The Swedish Committee for Afghanistan (SCA) has been involved in the implementation of education projects that include capacity development, advocacy, and service delivery since 1984. The SCA Teacher training aims at building teachers' capacities in subject knowledge and pedagogy which are geared towards teacher professional development in short courses.

Tata Institute of Social Sciences, Mumbai, India is among South Asia's premier research and teaching universities in Social Sciences. The Centre of Excellence in Teacher Education (CETE), an Independent Centre on the TISS Mumbai Campus engages in teaching, research, and field action, and has multidisciplinary expertise in the use of Information Communication Technology (ICT) in Education for quality reform at scale. CETE envisages its role as a "Catalyst for Transformation in Teacher Education" through multiple activities. The Centre has hosted several UNESCO award-winning field Action Research (AR) projects including Integrated Approach to Technology in Education (ITE) and Connected Learning Initiative (CLIx). The Centre's in-service teacher education programmes and Communities of Practice were also awarded a certificate of appreciation. The center has also had an international project of the Teachers Educators Masters Programme (TEMP) in the space of Teacher educators' professional development for Afghanistan Teacher Educators in collaboration with SCA.

1.2 Introduction to the MATPD Project

A Multi-Modal Approach to Teacher Professional Development to Address Evolving Educational Changes in Low Resource Settings.
The MATPD project aims to influence policy, practice, and further research in distance Teacher Professional Development in South Asian countries.

Project Specific Objectives

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

Project Research Questions

The research questions will pave the way to delve deeper and progress toward the core intended outcomes of the initiative. They are as follows:

- How can Teacher Educators (TEs) and Teachers be enabled to take ownership of adapting and adopting the proposed innovation along with the support of relevant stakeholders in the education system?
- What are the levers for and barriers to delivering pedagogically rich distance teaching and learning experiences at a scale?
- How can media and technology be used to enhance and develop leadership skills in TEs and teachers?

Project Activities

The project aims to develop practice, engage in research, and inform policy on teacher professional development using distance learning modalities, social learning communities, and practice-based and action-research-based professional learning and development.
MATPD draws on TPD strategies developed and implemented in India, by the Centre of Excellence in Teacher Education, through its Connected Learning Initiative and

Integrating Technology in Education Projects. These have been designed for low-resource settings and adapted to suit the contexts of the participating countries (Afghanistan, Nepal, and Maldives).

The main activities of the project

I. A Landscape Mapping Study on Teacher Professional Development across the three countries comprise an extensive secondary research and in-depth interviews with a set of diverse stakeholders including teachers, teacher educators, government officials, and policymakers. The landscape of TPD focused on aspects of mentoring, action research, inclusion, distance teaching-learning, and the use of ICT for constructive teaching-learning. The study helped to:

- Inform the projects' strategy, design, and activities.
- Identify available resources and contextual factors that may impact implementation, and discussion on adaptive management/risk mitigation strategies in case of a change in the conditions.

II. The BASK research activity was to study the change in beliefs and attitudes, skills and knowledge of teachers and teacher educators on aspects related to teacher professional development, action research, mentoring, social learning, reflection, ICT, and Gender Equity and Social Inclusion (GESI). This entailed conducting a baseline and an endline, which will be administered to the participants of the study.
III. The research fellows took the training programs as well as carried out an Action Research Project. They were also be expected to record and analyze interventions with approximately 5-10 school teachers with whom they are collaborating to conduct action research.
IV. A compendium of case studies/action research reports is prepared based on selected action research reports of research fellows mentioned in the previous activity. The compendium presenting emerging insights and provide a deep dive into some of the reflections of the fellows based on the professional development activities and peer-to-peer interactions.
V. A guideline document comprising perspectives for policy and practice of distance TPD in the South Asian region is developed.

Expected Outcomes

- Based on the analyses of comparative data, this study will generate knowledge relevant to improving the quality of Distance Teaching and Learning (DTL) in developing country contexts.
- The professional development opportunities provided to teacher educators during the program will enhance Teacher Educators' (TEs) competency and skills as they will get an opportunity to engage in hands-on practices and knowledge sharing with teachers. This is in addition to the coursework on a meaningful integration of new

media and technology for DTL, action research, mentoring, design thinking, and leadership.

- It will also foster the 21st-century skills of critical thinking, problem-solving, collaboration, and digital literacy in learners, thereby, making space for iteration and dynamism in the TE's and teachers' practice.
- The case studies and action research reports will provide emerging insights and a deeper understanding of the reflections of the fellows based on the training program and peer interactions. Also, it gives an opportunity for TEs to get authorship and showcase their work as a knowledge product.
- Lastly, the guideline document will supply a conscious observation and recommendations for governments and other stakeholders tasked and involved in distance teaching and learning.

The study is funded by IDRC under the Global Partnership for Education Knowledge and Innovation Exchange (GPE-KIX). The consortium comprises Villa College in Maldives, the Swedish Committee for Afghanistan, and the Centre of Excellence in Teacher Education (CETE), Tata Institute of Social Sciences, India which serves as a technical partner.

Villa College is the first and largest private higher education institution in the Maldives offering a variety of academic programmes. Villa College has established a strong foothold in the Maldivian community and has a strong collaboration with international partners in the UK and Malaysia. Villa College is recognized by international accreditation bodies such as the Asia-Pacific Quality Network (APQN), The International Network for Quality Assurance Agencies in Higher Education (INQAAHE), International Association of Universities (IAU), and the Association of Commonwealth Universities (ACU). The Institute of Research and Innovation at the college is a first of its kind in the country, dedicating itself to promote, undertake and foster research. The college has undertaken successful research projects for local clients and agencies such as the United Nations. It has also introduced Research grant schemes to provide opportunities for more people to undertake research. The teacher training programs offered at the Faculty of Educational Studies are known to be popular. VC Faculty of Educational Studies have always had a role in contributing to the policy formulation, by attending and engaging in discussions with the Ministry of Education and National Institute of Education. It is one of the key institutes that provides an accessible education to all islands throughout the country via their Atoll Campuses or through the Outreach Learning centers.

The Swedish Committee for Afghanistan (SCA) has been operational in Afghanistan for over 40 years. Currently, SCA operates in 17 out of 34 provinces in Afghanistan. SCA's presence in Afghanistan consists of the Kabul Management Office (KMO), five Regional Management Offices, and three Liaison Offices. SCA receives funds from various international and private donors, mainly from the Swedish International Development

Agency (SIDA). With more than 6,000 Afghan employees, it is one of the largest organizations in Afghanistan. SCA implements education, health, and disability programmes in rural and remote areas through the Rights-Based Approach (RBA). It also builds the capacity of individuals and civil society organizations to enhance their capacity to advocate for their rights. SCA also supports the empowerment and rights of women throughout its programmes. SCA has been involved in the implementation of education projects that include capacity development, advocacy, and service delivery since 1984. Currently, the programme is being implemented in 95 districts across 14 provinces. Through the Education Programme SCA aims to provide equal access to quality educational opportunities. SCA's Education Programme aspires to: Improve students' access to education and provide an inclusive learning environment for all children; Enhance effective teaching and quality in education; Support community-based organizations in target communities and professional associations to be more self-organized, representative and fulfill their responsibilities in the promotion of and advocacy for accountable and responsive education services and; Provide support to Education authorities to enable them have the required capacity to ensure sustainable, inclusive and effective education services in Afghanistan. The SCA Teacher training is probably the most important part of the SCA Education Programme intervention. It aims at building teachers' capacities in subject knowledge and pedagogy/ which are geared towards teacher professional development in short courses. Teacher Educator Master Programme (TEMP) is another activity under SCA teachers' capacity development. The focus of TEMP is teacher educators drawn from all over the country.

Tata Institute of Social Sciences, Mumbai, India (www.tiss.edu) is among South Asia's premier research and teaching universities in social sciences. The Centre of Excellence in Teacher Education (CETE), an Independent Centre on the TISS Mumbai Campus engages in teaching, research, and field action, and has multidisciplinary expertise in the use of ICT in Education for quality reform at scale. It has designed the TPD innovations whose elements will be piloted in this project

CETE has partnered with international countries and states within India to enhance professional development of teachers and teacher educators. Eg. Connected Learning for Teacher Capacity Building in STEM (CL4STEM) is working in Bhutan, Nigeria and Tanzania to build the capacity of secondary school science and math teachers by using open educational resources (OERs) and communities of practice (COP) for their professional development.

TISS is one of the knowledge partners for the G-20 Education Working Group (EdWG). Across the four Education Working Group meetings, TISS representatives were invited to observe and report on the proceedings, and prepare compendiums for the four meetings held across 2023. The group supported Ministry of Human Resource and Development (MHRD) to bring out the Compendium of programmes and practices of G20 countries as well as the education working group report.

The Centre was awarded the UNESCO King Hamad Prize for Excellence in Use of ICTs in Education in 2018 for its flagship initiative connected learning initiative as well as the OER Award.

The leadership team for the MATPD project

- Principal Investigator: Ms. Fathimath Saeed (Villa College, Maldives)
- Co-Principal Investigators: Dr. Ruchi Kumar (TISS, India), Mr. Mohammad Tahir Ismat (SCA, Afghanistan)
- Advisor: Prof. Ajay Singh, Indira Gandhi National Open University, India
- Research Team Anchors: Ms. Reema Govil (TISS, India), Dr. Aishath Nasheeda (Villa College, Maldives), Mr. Charles Osaka Kesa (SCA, Afghanistan-participated in the project till March 2022), Mr. Sadiq Dehzad (SCA, Afghanistan)

1.3 Introduction to BASK Study

As part of the 'A Multimodal Approach to Teacher Professional Development (MATPD) in Low Resource Settings project, fifteen fellows from each country (Afghanistan, Maldives and Nepal) took part in the 10 months long South Asian Teacher Educators' (SATE) Fellowship. The aim of the fellowship was to develop the capacities of educators for leading distance teaching and learning experiences; empower fellows to use Action Research to develop contextualized solutions for teaching-learning; and develop skills of mentoring among fellows to support teachers collaboratively.

Data was collected pre and post fellowship activities to understand the change in Beliefs, Attitude, Skills and Knowledge (BASK) of fellows. Hence the objective of this BASK study is to:

a. Identify any changes in fellows perceptions towards the different components of fellowship.
b. Develop teacher educators' knowledge and skills for practice based teaching and learning in the classrooms.
c. Enhance teacher educators' beliefs, attitudes, skills and knowledge on use of ICT skills, subject based and inclusive pedagogies used in teaching and learning.
d. Develop learning communities (PLC) for teachers to collaboratively discuss teaching pedagogies for effective teaching and learning.
e. Motivate teacher educators' to interact with members in PLCs in sharing of implementation experience and pedagogical practices.

1.4 The South Asian Teacher Educators (SATE) Fellowship Program

The fellowship program was conceptualized based on the contextualization of the CETE projects and the findings from the Landscape Mapping Study (LMS). An exhaustive desk research (106 documents) supplemented with primary data collection in the form of semi-structured interviews with 26 diverse stakeholders was carried out to understand the landscape of professional development of teachers and teacher educators in Afghanistan, Maldives, and Nepal.

The LMS notes the following deficiencies in Afghanistan's support for teacher educators and professional development for teachers.

- Despite the first teacher training college (TTC) in Afghanistan, *Dare-al-Mallimeen* being established in 1912, there is a need to reform and update teacher education and professional development, and address the technical, delivery modes, systemic challenges, financing, as well as coordination, equity, and gender gaps in the professional development of teacher educators and teachers in Afghanistan. Apart from the lack of one definitive TPD policy guidelines and literature in Afghanistan - Distance Learning, EdTech and action research are some of the other areas that need to be improved as part of enhancing TPD in Afghanistan.
- Regrettably, Education in Afghanistan has been politicized for decades, undergoing changes and transformations dictated by changing political ideologies, some of which resulted in women and girls being excluded from their right to education for decades, particularly in rural Afghanistan. Protracted insecurity has also negatively affected education delivery and Teacher Professional Development to a large extent. The country today does not have a conclusive policy specifically addressing Teacher Professional Development needs of the education system.
- The lack of an equitable distribution of teachers across Afghanistan is one of the challenges faced by the education sector. Political and cultural restrictions on women and girls have been a significant challenge after poverty, which prevent teachers, especially women, from participating in education and professional development opportunities, and improving their capacity to deliver quality education in schools.
- Subject content and pedagogy are some of the key focus areas for TPD in Afghanistan. Other key areas of focus include child-centered learning, mentorship, and coaching. However, to improve TPD, more emphasis is needed on on-site support-based interventions, rather than just relying on short-term

training workshops. Teachers need to be trained on how to use formative assessment and to use student feedback to improve instruction.

- Despite the rapid development of technology uptake in Afghanistan, most of the teachers do not have access to the internet and they do not have access and are unable to use ICT tools, especially among the poor and those in rural areas. Besides, ICT-related learning has mostly been taught theoretically in schools and TTCs. Unfortunately, general education and teacher professional development in Afghanistan are highly dependent (49 percent) on donor support.

The SATE fellowship program aims to address these gaps and build the capacity of mid-level functionaries as professional leaders through:

- Practice-based continuous professional development opportunity for teacher educators and teachers, which supports social learning from peers and experts.
- Addressing contextual problems through Action Research and enabling agency of teacher educators
- Enabling south-south collaboration and learning among South Asian countries.

I. Recruitment and onboarding of fellows

In Afghanistan, a cohort of 15 fellows was recruited through a selection process among the SCA Education Programme staff mainly master trainers, teacher educators from the Teacher Training Centers (TTCs), and education officers from the education departments at the Ministry of Education (MoE). The Teacher Educators and education officers are selected and introduced by the MoE.

The TISS project team members organized a virtual orientation session for the fellows and field mentors in May 2022. The session commenced with an introduction of all participants in the country team followed by orienting participants to the fellowship: its relevance and context, the different phases of the fellowship: distance learning courses, practice-based action research (AR) supported mentoring by academic and field mentors, enrichment sessions, professional learning communities on telegram and last but not least, the role and expectations from the fellows and the field mentors. A handbook describing the fellowship was shared with them.

II. The Fellowship Program

The SATE fellowship program, which was in a blended mode, spanned for a period of 12 months starting in May 2022 and culminating with a convocation ceremony for the research fellows, in May 2023. The table below highlights the timeline of the key fellowship activities.

No.	Key Activities: May 2021-May 2023														
	Years	2021	2022								2023				
	Activities	July	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1	Selection of fellows														
2	Orientation														
3	Orientation (AM & FM)														
4	Course 1-ICT														
5	SCA online workshop														
6	F2F workshop at TISS														
7	In-person meet with AM														
8	Enrichment sessions														
9	Course 2-Mentoring														
10	Course 3-Action Research														
11	AR Implementation														
12	Submission of AR Report														
13	Convocation														

The fellowship started with the fellows undertaking the 1st course titled “Using Educational Technology for Constructive Teaching & Learning” where they learned how they could meaningfully integrate ICT for the purpose of classroom teaching-learning.

They also participated in a week-long blended workshop (virtual plus in-person support) in June 2022. The participants attended the workshop from the SCA office in Kabul. Given the socio-political situation in Afghanistan and the ban on travel to India the workshop had to be held in Kabul online with in-person support by the SCA team and Zulaikha Rafiq, the consultant. The online workshop involved sessions on themes

such as the TISSx platform, TPD context in Afghanistan, working with teachers, action research, critical thinking and writing, the well-being of teachers and teacher educators, educational resources, and social inclusion in education. The workshop also provided specific thematic sessions wherein the fellows could interact and discuss their action research collaboratively with their academic and field mentors. The workshop concluded with the fellows making initial presentations about their research questions and action plans, and getting feedback from mentors, the consortium team, and other fellows.

In addition to the three courses, the fellows were required to carry out Action Research collaboratively with 5-10 teachers, addressing specific local educational issues in their work contexts, and submit a project report at the end. They could choose to work on any one of the prescribed six themes. (language, math, science, Open Education Resources, peace, social inclusion, and gender). The 15 Teacher Educators worked with 137 teachers across 63 schools spread over 8 provinces of Afghanistan, for their Action Research activity.

In this process, each RF was supported by a two-mentor team - an academic and a field mentor, who guided and supported them on technical aspects of AR and contextualization of the intervention respectively. The academic and field mentors were assigned to the fellows based on their areas of expertise and interest. The TISS project team scheduled Zoom sessions for interactions between fellows and mentors. There were however, logistical issues in arranging the meetings due to the busy schedules of the mentors, and in several instances, joint meetings with both the academic and field mentors became difficult. At times, meetings also had to be rescheduled due to the nonavailability of fellows on account of their work engagements. Fellows also scheduled independent meetings with mentors and teachers based on need, using other preferred platforms like WhatsApp, telegram, Facebook Messenger, and email. The fellows also created specific groups for communicating with teachers participating in their AR, using the above-mentioned platforms.

In addition to the routine mentoring, a series of reflection sessions and presentation sessions were organized by the consortium team to support the fellows and address any concerns and challenges that they may have regarding their AR. In addition to the mentors, the core SCA team also engaged frequently with the Afghanistan fellows, to provide feedback, and technical and logistical support for their research work, particularly during the school visits. The consortium team also conducted a series of enrichment webinar sessions for the fellows to support them with their Action Research activity.

A series of enrichment webinar sessions were curated based on needs of the fellows to support them with their Action Research study. These were primarily scheduled on Wednesdays based on availability of fellows across the three countries.

No	Enrichment Sessions	Date
1	Using technologies for constructive teaching and learning. Sync 1	24th May 2022
2	Fact sheet	7th June 2022
3	Academic writing	7th June 2022
4	Using technologies for constructive teaching and learning. Sync 1	9th June 2022
5	Mentoring For teacher professional development	21st June 2022
6	Designing surveys, interviews and classroom observations	30th July 2022
7	Insight from Literature review and Classroom Observation	3rd August 2022
8	Analyzing advantages and limitations of a resource	10th August 2022
9	Establishing rapport with teachers	17th August 2022
10	Lesson Plan as a tool for Reflection	24th August 2022
11	Working with teachers: How to capture experiences	7th September 2022
12	Data collection, Management	2nd November 2022
13	Inclusion in Action Research	23rd November 2022
14	Action Research Report Template Discussion	30th November 2022

A few fellows could not complete both cycles of their action research due to annual examinations and school closure for the winter vacations.

As part of the project, we created 10 professional learning communities to engage in social learning among fellows and between fellows and their mentors. These were a combination of country-specific groups plus AR thematic groups.

The completion of the fellowship was marked by a convocation ceremony for participating research fellows, in May 2023, where the fellows spoke about their journey of learning through the fellowship: their experiences and memories. They received certificates of successful completion of the fellowship to recognize their achievements.

1.5 Theory of Change

The theory of change provides a conceptual framework of how the important elements/levers of change will contribute to achieving the intended objective/impact.
The MATPD project aims to build the capacity of mid-level functionaries (lead teachers, principals, govt. officials, NGO members, and University teacher educators) to become professional leaders and bring about a change in their practice and beliefs.

A. Inputs

a. Distance learning courses on ICT, mentoring and Action Research
b. enrichment webinars
c. Practice based Action Research in collaboration with teachers
d. Social learning through mentoring by academic and field mentors and interaction with fellows.

B. Activities

a. Carried out distance education courses on ICT, Mentoring and Action Research.
b. Fellows worked collaboratively with 5-10 teachers to address local educational problems in their context.
c. Fellows received continuous support from their Academic and Field Mentors to carry out their Action Research Study through various communication channels (emails, zoom, WhatsApp, telegram, etc.)
d. Telegram groups were created to facilitate collaborative learning amongst fellows for their professional learning.
e. Frequent enrichment webinars were carried out to support fellows with their Action Research.
f. Reflection sessions were conducted with fellows to hear about their experiences, learnings, challenges, and how these can be resolved.

C. Change

Short Term

a. Conducting Action Research to improve teaching practice.
b. Understanding the mentoring process for teacher's professional development.
c. Finding ways to use ICT for PD of teachers/classroom teaching.
d. Finding common grounds for collaborative practices - Becoming reflective practitioners.
e. Becoming teacher leaders in the community.
f. Using Professional Learning Communities for collaborative learning & sharing

Long Term

a. Policy Reforms (in-service /pre-service)

1.6 Overview of the Research Report

The BASK Study report is organized into four sections.

Section I: The first section orients the readers to the MATPD project, the fellowship program and the theory of change.

Section II: The second section provides a brief overview of the sampling methodology, data collection tools designed for the study and the approach to the analysis. The demographic profile of the fellows is also included in this section.

Section III: The third section presents findings on change in fellows' knowledge, skills, behavior and attitude pre and post the MATPD intervention. It reports on themes such as role of fellows within the MATPD project, professional development experiences, action research, mentoring, reflection, social learning, ICT and GESI.

Section IV: The fourth and the last section comprises the conclusion, references and the appendix.

Section II.

RESEARCH METHODOLOGY

2.1 Research Questions

1. What are the beliefs and attitudes of the fellows with respect to the use of ICT, Action research, and mentoring for supporting TPD? What are changes in beliefs and attitudes as a result of participation in the fellowship?
2. What is the level of confidence among the fellows in the skills and knowledge required for the use of ICT, Action Research, and mentoring for supporting TPD? What is the change in skills and knowledge of the fellows as a result of fellowship participation?
3. What are the levers and barriers for supporting pedagogically rich distance learning methodology for scaling an innovative TPD model?

2.2 Data Collection

A mixed methods approach was adopted for the BASK study through interviews and surveys. The baseline-endline tools were developed collaboratively with the consortium partners. The baseline study was carried out with 14 Afghanistan fellows in June and July 2022. The endline was conducted with the same set of fellows in March and April 2023.

Six thematic surveys developed as google forms were shared with the participants to fill and submit within a week's time. Once they were done with the surveys, the interview tool was shared with them 2-3 days in advance of the interview, so that they were familiar with the questions and could think about their responses.

Interviews with the Afghanistan fellows were conducted by the SCA team face-to-face and virtually over Microsoft Teams and WhatsApp. Each baseline interview was completed in one round of 1-1.5 hours and the endline interviews were carried out in 1.5 – 2 hours each, since the tool was longer. The interviews were conducted with the fellows in English and local languages (Dari and Pashto) considering their language abilities and knowledge.

Baseline: The baseline comprised the following:

(a) In-depth interviews on themes of MATPD role, professional development experiences, mentoring, action research, collaboration, reflection, and ICT
(b) Thematic surveys on professional development experiences, ICT, mentoring, action research, PLCs, teaching-learning processes (TLP), and inclusion

Endline: The endline comprised the following:
(a) In-depth interviews on themes of MATPD role, professional development experiences, mentoring, action research, social learning, reflection, ICT and gender equality & social inclusion (GESI)
(b) Thematic surveys on collaboration, reflection, mentoring, action research, ICT and teaching-learning processes (TLP)

2.3 Data Cleaning

A. Qualitative Data

During the course of the fellowship, we found that three fellows were more comfortable communicating in their local language while expressing their opinions and thoughts during various sessions. Hence, the research team decided to conduct the endline interview for these fellows in their preferred local language. The data collected for these three fellows was translated into English. Then all the interviews were transcribed in English manually. The cleaned files were used for the purpose of data analysis.

B. Quantitative Data

The quantitative data was collected through an online survey from the participants (Afghanistan fellows). After data collection, it is essential to ensure that the data is accurate, consistent and ready for analysis. Further, the data was processed at multiple levels and in a number of iterations before analysis. The data was inspected for missing values, outliers and inconsistencies. In one theme (ICT), normalization of two items was done to achieve uniformity and coherence in responses. The data were also cleaned for duplicate responses and repetition.

2.4 Data Analysis

A. Qualitative Data

The method chosen for the analysis of the baseline-endline data is deductive analysis. In order to get deeper insights from the responses, this was followed by coding the interviews using an inductive approach where the coding and the themes generated are directed by the research questions, literature review, and the content of the data. The phases of thematic analysis as described by Braun and Clarke (2006) allow for a systematic way of seeing, as well as processing qualitative information using coding.

They also view thematic analysis as a "constructionist method, which examines the ways in which events, realities, meanings, experiences and so on are the effects of a range of discourses operating within society". Thus, the research moves from simply describing what participants report to offering a nuanced interpretation of the patterns that the analyst has observed. The different phases of thematic analysis are: familiarization with data including transcription, generating initial codes, collating codes into potential themes, reviewing and defining the themes, and developing the report. The TISS team conducted a session on data querying and coding for the consortium partners to ensure standardization in the process.

B. Quantitative Survey Data

The quantitative data was initially analyzed through descriptive statistics such as measures like central tendency (mean, median and mode), frequency distribution (count and percentage) and measure of dispersion (standard deviation). Moreover, the dataset was observed for the internal consistency reliability through Cronbach's Alpha. It helps in converting the themes into scale. Further, the data was processed for inferential analysis. The parametric inferential statistics were used such as paired sample t-test for mean comparison and hypothesis testing and the outcome of the analysis was then tabulated and summarized for interpretation.

2.5 Demographic Profile of Fellows

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 RFs had Master's degrees, and 10 were Bachelor's (BA & BSc) degree holders.

The project ensured gender and social inclusivity in the selection of fellows. There were almost an equal number of men and women fellows in the cohort (8 Men, 7 Women), who were from the country's capital and various provinces. Among the fellows, only two were from the capital Kabul, while the remaining fellows were from the eastern, northern, and southern parts of the country.

AFGHANISTAN FELLOWS: PROFILE							
Fellow	**Gender**	**Profession**	**Qualification**	**City**	**Site**	**Minority**	**Disability**
AF1	F	Teacher educator in TTC	MA (Teacher Education)	Kunar/Asad Abad	Urban	No	No
AF2	M	M&E and reporting specialist (MoE)	BA (English Language Literature)	Kunar/Asad Abad	Urban	No	No
AF3	M	M&E Member (MoE)	BSc (Mathematic)	Helmand/Lashkargah	Urban & Rural	No	No
AF4	M	Teacher Educator in TTC	MA in Social Sciences (Educational Sciences)	Paktika/Urgon	Rural	No	No
AF5	M	Teacher educator in TTC	BA (English Literature)	Paktika/Sorobi	Rural	No	No
AF6	F	Teacher Educator in TTC	MA (Teacher Education)	Jowzjan/Shaberghan	Urban	No	No
AF7	F	Teacher Educator in TTC	BSc (physics)	Jowzjan/Shaberghan	Urban	No	No

AFGHANISTAN FELLOWS: PROFILE							
Fellow	**Gender**	**Profession**	**Qualification**	**City**	**Site**	**Minority**	**Disability**
AF8	F	Academic and professional member for TPD (MoE)	BA (English Literature)	Kabul city	Urban	No	No
AF9	M	Senior Education Officer at a NGO	BSc (Physics)	Balkh/Mazar Sharif	Urban	No	No
AF10	F	Master Trainer at a NGO	BSc (Biology)	Balkh/ Mazar Sharif	Urban	No	No
AF11	M	Master Trainer at a NGO	MBA (Management)	Nangarhar/Jalalabad	Rural	No	No
AF12	F	Master Trainer at a NGO	MA (Pashto Literature)	Nangarhar/Jalalabad	Rural	No	No
AF13	F	Master Trainer at a NGO	(BSc (Mathematic)	Ghazni/Qarabagh	Rural	No	No
AF14	M	Master Trainer at a NGO	BSc (Physics)	Ghazni/Qarabagh	Rural	No	No
AF15	M	Academic and professional member for TPD (MoE)	MA (Education)	Kabul city	Urban	No	No

Section III.

FINDINGS

3.1 Understanding of MATPD

At the beginning of the program in Afghanistan, understanding of participating research fellows, of the MATPD, and their own role in it was fragmented. Fifteen research fellows (RFs) participated in the BASK assessment interviews (14 in the survey) of whom seven were female. Of the 15, 12 research fellows (RFs) were aware of their roles at baseline, and the important research element of the project, which aimed to identify and resolve problems related to teaching and learning. One described it as being 'all about how to utilize (ICT) technology that really helps in improving teacher educator(s).' Another described her role as that of a 'mentor to teachers, to transfer knowledge (which she learns in the project) to them', to help them solve their problems. A few (4/15) RFs described the multimodal approach with varying degrees of understanding. Two (of 15) RFs understood it to be about building teachers' capacities in distance teaching and learning, to enable them to continue to provide education during Covid-19-like situations, where physical schools were not possible. All 15 RFs had a shared understanding that action research could help them solve teaching and learning related problems faced by teachers, and would build professional capacities of teachers.

As expected, by the end of the programme, Afghanistan participants in the MATPD, developed a more in-depth and clear understanding of the program, and were able to articulate more descriptive details about their own role and responsibilities, in the end line interviews. They described their role in the programme variously as;

"Fellows had the main role in the project. The entire programme was propped by the fellows because they were the ones who went to field, they worked with teachers, conducted research, and also reviewed relevant literature to use the experience and approaches of other scholars." (AF13 - Master Trainer in NGO).

Another Research Fellow (RF) described her role as;

"My role was of a research fellow, a mentor, a resource person, and I conducted an action research in the project." (AF8-Academic and Professional Member for TPD in MoE).

Details of their responsibilities included, 'attending workshops, webinars and instruction from TISS and SCA, designing proposal for action research, developing tools and action plan, conducting TPD workshop for teachers, and implementing two cycles of

action research in their target schools, with help from their assigned academic and field mentors.

3.2 Teacher Professional Development (TPD)

In Afghanistan, teachers mainly receive professional education and training in teacher training colleges before recruitment. On-job training supports usually are in the form of short training workshops and seminars organized, either by the Ministry of Education's Teacher Education Directorate (TED), or by education partners among international and local NGOs, or UNICEF. However, such opportunities are not evenly spread, and all teachers may not be covered. All RFs in Afghanistan agreed that Teacher Professional Development (TPD) and professional development of teacher educators is of vital importance in the context of Afghanistan. Since many school teachers in Afghanistan are underqualified for their job, on-job professional development support is critical to enable delivery of good quality education to students. This was reflected in the responses of all MATPD participants.

The responses at baseline focused primarily on the conventional understanding of TPD in Afghanistan, and the individual experiences of respondents. However, 'technological advances, coupled with considerations of the changing needs of today's learners, call for exploring new directions for multimodal teaching and learning.'[1]

learningAt the end line, the Research Fellows (RF) were more interested in describing the new modes of professional development they had learned, and used with the teachers they mentored, their applicability and relevance in Afghanistan's context, and any challenges they posed. Respondents used the terms 'teacher' and 'teacher educator' interchangeably in their responses at baseline, and while some continued to do the same at the end line, a few offered clarifications, indicating the difference between the two roles. A possible explanation for the confusion is the more prevalent use of the term Master Trainer, in Afghanistan rather than teacher educators. Also, the term, 'Ustaad' is commonly used to mean teacher in Afghanistan, even at the tertiary levels. This may also explain the interchangeable use of teacher and teacher educator, and Afghanistan respondents may habitually associate the term teacher and educator with the general category of teachers.

At baseline, the most common and favored modes of TPD in Afghanistan mentioned were in-person, interactive, practical learning activities, such as training courses and workshops, mentoring, and coaching. Reading professional literature and independent learning from online resources were less commonly practiced by educators in

[1] Bettyjo Bouchey, Jill Castek, and John Thygeson Multimodal Learning

Afghanistan. Fourteen RFs, who participated in the baseline survey, listed TPD activities they had participated in, which they considered most valuable. Afghanistan RFs valued areas based on their own professional development experiences; these included: Teacher Learning Circles (TLC), exposure visits to other schools and classroom settings, and learning from other professionals. Fellows believed professional learning circles (TLC) allowed experimenting with new teaching methods with colleagues, discussing teaching problems, reflecting on lessons after class, educating each other about teaching and learning theories, collaborating, analytical thinking, observation of colleagues in the classroom, and giving and receiving feedback. They also mentioned the value of seminars that the Ministry of Education had undertaken, which resulted in professional development of teachers. Some mentioned the INSET-6 (In-Service Teacher Education Training) program for self-assessment, as well as topics such as summary and smart plan, Bloom's Theory, etc as being useful.

At baseline, the most favored modes of teachers' professional development among Afghanistan participants were workshops and short courses, and observation visits to other schools. However, there was a level of disparity, and sometimes contradiction, between survey and interview responses. Survey figures indicated that six RFs had engaged in research or action research activities in the past. This figure is surprising and appears to contradict the data from the baseline interviews, which suggested that only one in 15 RFs had any professional development in action research. One RF recounted her thesis writing for her university degree as the action research/research she had done. Other RFs admitted they were new to research, and recognized research and action research as areas of need for TPD.

This discrepancy in information from the same sources could be because respondents were not familiar with the terminology at the time of the baseline surveys, or they may have self-administered the surveys with incorrect understanding of the options they had to choose from. The baseline interviews happened later, and interviewers may have explained the questions more clearly to respondents, suggesting that interview responses are more credible at baseline.

Technology-dependent professional development activities were less significant in the experience of all respondents at baseline, and only a few (6/15) RFs and one FM had ever been part of online professional networks. This correlates with comparatively low usage of digital resources, and the uneven and unreliable access to connectivity in Afghanistan, which makes it difficult to hold sustained communications online.

Only one RF had benefited from exposure visits to educational settings in other countries as part of their professional development.

At the end line, all respondents demonstrated a deeper understanding of various modes of TPD and described their own professional development experience in the course of

the program at length. Most of the RF described their participation in the MATPD as a fresh new approach to professional development and found it useful and different from anything they had experienced before. Designing and implementing Action research was new for all RFs. Use of technology for education (Zoom, Telegram, online courses, Google Scholar) was also a novel experience. Many RFs encountered research proposal and report writing, and literature review for the first time. Other elements of the MATPD that were new to the RFs included working collaboratively with other Fellows, and practically with teachers in schools to identify problems and find solutions, mentoring teachers, and being simultaneously mentored, and using apps like WhatsApp and Telegram for TPD.

Their understanding of mentoring also improved, and a few (4/15) RFs admitted that they now understood the difference between mentoring and monitoring. Several, who had mentioned being involved in mentoring in a narrower sense, in the past, realized it was more of a collaborative and long-term process of providing professional support. As one RF (AF15 - Academic and Professional member for TPD in MoE) said;

"I have never been part of any such training. The trainings I attended (earlier), which were supported by international NGOs and UN partners of MoE, were different. They were usually short-term workshops, which we attended, and (there was) nothing after that. In this program, there was an important practical element. We went to schools and actually observed teachers and identified problems and made decisions about what to work with."

It involved lectures, assignments, and research. There were deadlines to meet, and it was 'rigorous.' The fact that they were learning together with Fellows from Maldives and Nepal, was also a new and professionally enriching experience.

Being new and different from their experience up until then, meant that Afghan RFs encountered a number of challenges initially. It took them some time to be able to use ICT effectively and efficiently, and to benefit from the webinars, and other online activities offered in the program. Internet poor connectivity in some parts of the country also posed problems for some of the RFs, who had interrupted access to the webinars and lectures, and doing online assignments; consequently some RFs (5/15) felt they were unable to participate optimally. Language was another challenge for a number of RFs in Afghanistan. While most of them have some knowledge of the English language, a majority of the RF work with teachers, in the local languages, and writing research proposals and reports was a struggle. Some found it difficult to understand and use online resources, or even the advice of the academic mentors, without the help of a translator. The language barrier was also, likely, one reason why there was limited inter-country interaction and learning with RFs from Nepal and Maldives. Some (4/15)

RFs talked about challenges in mastering new skills such as writing research proposals and reports, and data collection and analysis.

Other challenges faced due to the socio- political context of Afghanistan included, getting permission from the De facto authorities to work in schools, and convincing teachers and school administrators that their action research would contribute to teacher professional development. In some parts of the country in the South, there were reservations about using smartphones and social media networks for professional development.

Afghanistan RFs also struggled with functioning in minimally resourced schools, and other factors such as the long distances between the schools they worked in, teacher absenteeism, and frequent disruptions of their plans due to other activities within the school such as distribution of textbooks or food aid among students.

The Multi-Modal Approach to Teacher Professional Development proved to be a revelation for Afghanistan RFs, who had hitherto mostly translated TPD as being formal training courses or workshops on predetermined topics. By the end of the MATPD program, their understanding of TPD had widened and deepened, and they learned that there could be multiple modes of TPD, which complemented each other.

Through their AR experience, they realized that individual teachers may need specific support in specific contexts, and therefore, one-of one-size-fits-all training workshops may not respond to all their capacity needs; mentoring and coaching were needed on an ongoing basis. Earlier, sometimes support was provided to teachers in response to expressed need; now they understood the importance of periodic observations, demonstration of model lessons, and preparing micro-plans collaboratively with teachers, to address specific problems of the teacher or the school. Other means of teacher professional development identified by RFs at the end line included, collaborative preparation and/or teaching in classes, ongoing online or in-person support through engaging in communities of practice with peers and teacher educators, and self-education using online books and resources of experts and other education practitioners.

Interestingly, group and individual reflection were also described as modes of PD. Some RFs (6/15) phrased it as ‘learning from one’s own experience and reflecting on it,’ and ‘learning from their own mistakes’ (by reflecting on them), and by ‘collaborating with peers’.

With a more comprehensive and inclusive understanding of TPD came a redefining of the attributes of a teacher educator. At baseline the respondents focused mostly on the qualifications and training needed to be a teacher educator. At the end line they described the qualities of a teacher educator as follows:

A teacher educator must have professional and contextual knowledge about inclusive education and teaching methodology, and skills in observation, classroom management, and organizing and planning. They should have experience in data collection and research. They should have decision-making skills, and the attributes of a mentor, collaborator, and problem solver. Their behavior and attitude toward teachers should be respectful and they should cultivate the ability to earn the trust of teachers. They should have patience, understand psychology, and be sensitive to students' needs. It is clear from the above that in the course of the SATE fellowship Afghanistan RFs had developed a deeper understanding of the role and qualities of a teacher educator. As one RF summed it up;

"A teacher educator needs good communication skills, critical thinking, constructivism, listening skills, a growth mindset, and the desire for ongoing self-improvement." (AF8 - Academic and Professional Member for TPD in MoE).

A teacher educator should have adequate ICT skills to be able to search for solutions to emerging education issues, and to update their knowledge about teaching and learning.

3.3 Action Research

'Action Research is a process that improves education by incorporating change and involving educators working together to improve their own practices; it is collaborative and participative, since educators are integral members of the research process.'[2] For all 15 RFs in Afghanistan, AR was a new experience; several struggled initially, and one RF was not confident they could complete it at first. At baseline, responses from RFs were somewhat confused and self-contradictory, with survey data indicating some level of knowledge and experience of action research by a few RFs, but interview responses stating that they had never engaged in action research. As with other themes, it was obvious that the survey questions were most likely misunderstood to some extent by a some of the RFs.

By end line, all 15 RFs had engaged in action research (AR), and had a clearer understanding of the term. All RFs said their AR was successful and involved considerable new learning. Eight of them (15) mentioned being new to writing research reports and proposals, six mentioned it was their first time using ICT for zoom calls, and using google documents, four said they had never done a literature review. They described action research (AR) as a collaborative activity, done with support and

[2] Craig A. Mertler, Arizona State University Action Research as Teacher Inquiry:
A Viable Strategy for Resolving Problems of Practice - https://files.eric.ed.gov/fulltext/EJ1314304.pdf

guidance from academic and field mentors at one end, and with cooperation of teachers and students at the other end. By end line, all RFs believed that the aim of action research was 'to solve teachers' problems collaboratively, and it involved observation, feedback, and practical support to teachers and students.' What made it special was that this form of TPD involved all stakeholders in the process. 'I learned to research on specific topics, to narrow our focus, asking questions, and how to work with all stakeholders -- teachers, students, school admin, directorate, one of RF said;

"Previously we only focused on the teacher. We trained teachers, we have never done TPD this way in Afghanistan." (AF3 - TED)

One RF described AR as an *"extended, continuous process of PD support, involving taking action, and supporting corrective action mostly driven by teacher educator (researcher)." (AF8-Academic Professional member for TPD in MoE).*

Afghanistan RFs gained new knowledge and skills in the course of the program including, use of ICT for research, and online platforms such as Zoom for distance learning through webinars for teachers and teacher educators, using google documents, reflection, mentoring, observing classes and recording observations systematically, literature review, making checklists, developing data collection tools, data collection and analysis, doing research in multiple cycles, and collaborating with other fellows. A few (3/15) RFs also said they learned effective teaching and learning strategies, and that children in a diverse group may learn differently.

The Afghanistan RFs learning was from different sources including observation of class teachers, interviews with teachers and stakeholders, review of existing literature of experts in the field, support of the academic and field mentors, and the various webinars and online courses in which they participated. Support from other RFs (in-country) and the SCA team were also mentioned as useful learning resources by the RFs. Afghanistan RFs believed the action research had contributed to their professional development as teacher educators, and they had learned how to identify problems collaboratively, and find contextually relevant solutions, how to design evidence-based interventions, and create online communities of professionals. Learning from experts and scholars on specific subjects also built the capacity of the RFs.

The process of working with teachers was similar for all 15 RFs in Afghanistan. After getting formal permission from the local education authorities and school leadership, they identified participant teachers from schools, and included them in the planning and design of the research. Male RFs generally worked with male teachers (except one, who also worked with female teachers) and female RFs with female teachers. Gender segregation is a culturally approved manner of functioning, and with the Taliban in control of the country, it has also become mandatory, in most settings in the country.

Research activities included class observations, interviews with teachers and/or students, data sharing and discussion with teachers. RFs collaboratively developed lesson plans, teaching and learning material with teachers, and provided in-class support to teachers. Three (of 15) RFs described giving demonstration lessons. All RFs arranged short TPD workshops, and undertook follow-up observations of teachers to discern evidence of positive change in their practice. Initially a few (3/15) had to convince teachers of the benefit of participating in the research, but over time, the teachers understood the benefit for them, and were fully involved. At least one RF said he continues to be in touch with mentees after the research project ended. A few RFs (3/15) found it difficult to create online professional communities because teachers did not have smartphones.

Overall, all 15 RFs were satisfied with the outcomes of their research, and believed their AR went well. After initial persuasion and convincing teachers and school administrators cooperated, and teachers willingly invested their free time in PD, when needed. They took RF's feedback and mentoring support positively. One RF said that the teachers wanted her to continue working with them for a year. PD workshops were effective, and RFs shared the AR process and findings with participating teachers, and collaboratively devised and practiced solutions to the problems. All participating teachers demonstrated improved classroom practices and more effective teaching strategies as a result of the intervention. Research Fellows mostly valued the contribution and support of the field and academic mentors.

While many RFs mentioned challenges, not many gaps were recounted. Owing to their initial struggle with understanding and navigating research proposal writing, some of RFs (6/15) said they had started their field work later than planned. Consequently, they were pressed for time, and schools in Afghanistan were approaching annual exams followed by three months of winter vacations. This made it impossible for a few (3/15) RFs to undertake the second cycle of the research as planned.

Language of instruction and work was also a challenge for a number of RFs. At least six out of 15 fellows admitted to struggling with webinars in English language, which impacted their ability to make optimum use of the knowledge imparted. One fellow joined late, after the online courses had ended, and hence missed the learning. Some RFs (5/15) felt more in-person support would have been beneficial, while doing their research. Two out of 15 RF said their FM was unavailable for support. They managed with advice and support from the SCA team and other Afghanistan fellows.

All RFs recognized the value of AR in teacher professional development, and expressed interest in doing more action research in future with the same teachers, or on the same subject in other schools. One RF had a specific idea about a research topic related to inclusive education, which he wanted to explore. A few RFs (2/15) hoped to disseminate their AR experience and report among colleagues within their place of work (Teacher

Education Directorate or District Education Directorate). A few number (4/15) RFs suggested participants teachers, could be assigned the role of mentors to cascade the new knowledge gained, to other teachers in the same schools, so they could also develop professionally and benefit from improved teaching and learning practices. However, they were also conscious of likely barriers to taking this forward. Some of the barriers included a general lack of support from the Ministry of Education and school administrations for innovations in TPD, unclear policies of the De Facto authorities, related to education and TPD, lack of resources and time to invest in AR, and the fact that teachers are already overworked and under-paid, making them less enthusiastic. Given the current political apathy toward improving education, they anticipated difficulty in introducing new activities into the system.

The Afghanistan participants opined that to mainstream action research within TPD in Afghanistan, it is necessary to convince the Ministry of Education (MoE) to accept it as an integral component of the TPD program. Also, additional funding and educational and other material resources must be made available to teacher educators and teachers. They also pointed to the need for technical support from international NGOs, for institutionalizing it.

Qualitative findings were corroborated by quantitative data collected through baseline and endline surveys. Responses to surveys revealed *that* mean responses about familiarity with action research, were 2.9 (1.09) and 3.9 (0.76), respectively. In the baseline some (5) of respondents rated their familiarity at around 2 (to a small extent) and at the endline the majority (9) of responses rated it at 4 (great extent). This shows a positive shift toward the familiarity of action research. The Cohen's d (1.06, Effect size) indicates large positive change.

The question on "Ability to conduct action research" comprised of 6 items in both baseline and endline and its Cronbach alpha is 0.679 and 0.879 respectively. In comparison, the paired t-test (two-tailed) comes out to 0.000291, which is less than the alpha (0.05) level of significance. It indicates a significant difference between baseline and endline mean responses. The positive change can be seen in the high category, that is, the ability to formulate research questions, decide appropriate research methods, design research tools, plan a research schedule, and communicate findings. However, low change was found related to the analysis data and draw conclusions.

The question on "Beliefs about various aspects of action research", consisted of 19 items. The baseline and endline, Cronbach alpha are 0.855 and 0.896 respectively. On comparison, the paired t-test comes out 0.035309, at alpha 0.05 level of significance. It indicates that a significance difference exists between baseline and endline mean response. The majority of the items (10) shows positive change on the belief about various aspects of action research. Furthermore, the change in the beliefs about action

research is organised into three categories: low, moderate and high change. The change in belief of action research helps to reflect and bring about a change in one's own practice and the belief in action research helps to base decisions about teaching and learning practices in data driven, classroom-based research findings, is low. However, majority of the items show moderate positive change, such as to study a single student for action research, action research helps improve students' learning outcomes and to take ownership in problem solving, constructing knowledge and professional growth, to enable schools to become effective learning communities, action research can only be done by individual teachers in their classroom and the process is iterative. Moreover, on two items the change is high, such as, A group of students and a school can be studied for Action Research (refer to Appendix 7).

Qualitative and quantitative findings are also mutually supportive. The qualitative data shows that all RFs in Afghanistan learned something new during AR implementation, increased their awareness about AR, and understood its importance in teacher professional development. Successful results were revealed; changes in teachers' classroom practices as well they showed interest in utilizing AR in future studies. These findings have been supported quantitatively as well; an increase in RF's familiarity with AR, capacity for conducting research, and views on AR. Generally, these findings imply that AR facilitated education improvement in Afghanistan, while further resources and support are needed for to mainstream it effectively.

3.4 Mentoring

Evidence from the baseline surveys and interviews suggested that both research fellows and field mentors in Afghanistan were familiar with the concept of mentoring. Although only half of the RFs (7/15) said they had ever had any mentoring experience either as mentor or mentee, most of them claimed to understand it. Many fellows (11/15) had read about mentoring, and some fellows (9/15) had discussed it with colleagues or seen it practiced in other professions. Most research fellows (13/15) believed they had moderate to high levels of skills to be mentors.

The general understanding of most RFs regarding mentoring was that it was about senior staff helping, guiding, and advising junior staff, or new team members being guided and oriented about the organization's culture and procedures by an experienced team member. A few RFs (3/15) also described it as observing teachers in the class to identify problems with their teaching, and helping them to solve the problems. Training and educating junior staff was how most RFs understood the term mentorship at baseline. One RF described observing teachers in classes, and filling checklists to submit

to the office as mentoring. One RF described mentoring as collaborative work between two practitioners.

At least two respondents referred to SCA's mentoring program in which experienced teachers in schools were assigned mentoring roles, to help new teachers understand the work environment, and become familiar with the school rules and facilities. Some equated mentoring to educating or training. A few (3/15)RFs said they had experienced the roles of both mentor and mentee, and believed they learned a lot in both roles. All respondents believed mentoring was an important component of professional development.

By end line, all RFs demonstrated a more in-depth understanding of mentoring. They were all in agreement that mentoring is important for TPD, and described it variously as 'a more knowledgeable, skilled experienced individual transfers skills guides less experienced person' or 'continuous professional development of an inexperienced teacher with help from an expert', and involving 'practical hands-on assistance and regular follow-up'. Another description offered was that mentoring is a collaborative experience where 'the mentee identifies a problem, and mentor helps the mentee find a solution from experience, or by studying together with the mentee.' It involves giving instruction and positive feedback. A mentor can help the mentee on personal and professional levels, to transform knowledge and practice. One RF described mentoring as "collaborating and supporting a mentee to achieve set goals, and guiding and directing other staff, giving feedback (strengths and weaknesses) so they can improve professionally". One RF (AF3) said;

"Mentoring is providing specific support to a teacher. A mentor works in a limited space with a specific person".

Another RF summed it up as;

"Working with teachers to give them support and guidance to enable them to do their job well', and emphasized that mentoring was 'an ongoing long-term process". (AF 8 - Academic and professional member for TPD in MoE)

At the end line it was clear that any confusion RFs may have had initially, between mentoring and monitoring, had dissipated. RFs could recognize the difference between monitoring and mentoring. Responses to end-line interview questions indicated that all but one RF had a clear idea about the difference between the two practices. They described monitoring as being periodic and for evaluation purposes; 'it does not require any immediate action or feedback, and is used for data gathering that results in action.' Mentoring, on the other hand, is 'supportive, long-term, involves immediate feedback, and supportive action for improvement of mentee.' Other interesting observations about the differences between mentoring and monitoring by various RFs included: 'Mentoring

is a process through which change in behavior, attitude and practice can be affected; monitoring only measures results/ quality of action'; 'monitoring identifies weaknesses while mentoring works with (a teacher) to fix weaknesses'. Mentoring was also described as cooperative and working together with mentee, while monitoring as assessment and one-sided.

Participation in the MATPD allowed RFs to learn valuable mentoring skills. Some skills they recounted were how to identify problems and gaps, and find ways to correct them. They also learned communication, observation and interview skills, being responsive and giving constructive feedback, collaborating and being willing to share skills and experience, and reflection. RFs learned how to be a mentor from their own mentors. One RF said he learned to be patient even when the mentee made mistakes; this he learned from his own experience as a mentee. Others learned to be professional, accessible, and understanding mentee's needs (learned from Academic Mentor and Field Mentor). They also learned use of ICT for teacher support, and action research. Other mentoring skills valued by RFs were making observation checklists, writing a reflection notebook, keeping records of observations and activities, meeting mentees regularly, motivating teachers, and identifying students' and teachers' needs. They also learned how to allocate time for mentoring, and how to 'work step by step to solve one problem at a time' (earlier they only monitored teachers, and gave teachers a list of problems, expecting them to correct them).

As one RF described his Teacher Education practice before the intervention.

"Earlier I acted as a supervisor, but now I work as a colleague and helper. I encourage them (teachers) to improve their skills and knowledge, and make sure teachers do not feel insulted by the way I speak to them". (AF3 - M&E member of MoE)

By end line, all RFs agreed about the importance of mentoring for professional development (PD). RFs agreed on the value of mentoring for PD of Teacher Educators (TEs), but many (10/15) continued to use terms teacher educator (TE) and Teacher interchangeably. A few (2/15) RFs responded specifically for teacher educators (TE), saying mentoring is important for building TEd professionally, to update their knowledge and practice. They gave their own experience in the MATPD as an example. Most (10/15) respondents spoke at length about the value of mentoring teachers, one of them generalizing it to include all groups of peoples - teachers, students, community, and therefore, by corollary, for TE as well.

RFs described the outcomes of their own mentoring experience, and how they applied it in their work. They understood that teacher educators and teachers can benefit in a mentor-mentee relationship. Some (5/15) RFs said they learned from their own mentors' behavior and attitude, and applied the learning when they mentored teachers. They learned how to identify problems, and work together with teachers and students.

They learned how to use ICT for mentoring, and initiated online groups for sharing and support to teachers, and also provided in-person feedback. Other learnings from their own mentors included reflection, peer mentoring, listening, sharing experiences, building trust and creating bonds, communicating, and working as equals. They understood the importance of creating a safe space, celebrating successes, and building honest friendly relationships with mentees. Some of RFs (5/15) said they plan to continue mentoring teachers after the project.

The blended mode of mentoring of RFs was a new and interesting experience. One RF qualified that it was not necessarily a 'blended' mode since most RFs were mentored online by both field and academic mentors. That said, having two mentors was useful; the field mentor (FM) was familiar with local conditions and overall context, as well as having the advantage of a shared language. The academic mentor (AM) had expertise in action research, and could provide academic and technical support and advice, while the FM gave more hands-on assistance e.g. with preparing presentations. Together the mentors enabled RFs to access multiple physical and technical resources. Overall, working with two mentors was considered a 'good' experience, and a majority of (13/15)RFs believed both AM and FM motivated and encouraged them and contributed to their success.

There were mixed reactions of Afghanistan RFs about the online nature of the mentoring they received. A few RFs (2/15) thought while online mentoring was useful, it could have been more impactful and timely, if it had been in-person, primarily owing to practical issues like delays in response, poor internet connectivity and frequent power cuts in Afghanistan, particularly in provinces like Paktika and Helmand. A few (3/15) RFs observed that toward the end of the AR, when need for response was urgent, responses from AMs were sometimes delayed, due to them being busy. A few (3/15) RFs thought some in-person mentoring would have been useful, when RFs missed some online sessions, or couldn't understand some deep academic concept explained in English. Some of RFs (5/15) also stressed the importance of mentor and mentee sharing a language; a small number (3/15) of RFs said they faced a language barrier occasionally, when assistance was from AM.

Familiarity with the mentors could have further enhanced the mentorship experience. As recommended by E.R. Mathipa and S.M. Matlabe[3], 'mentoring relationships are strengthened when mentors and mentees are acquainted before they are assigned to work together'… and 'they are more likely to begin their mentoring relationship from a position of communication and cooperation.'

[3] Elias R. M. Department of Language Education, Arts and Culture, University of South Africa
Sizakele M. M. Department of Educational Studies, College of Education, University of South Africa MENTORING: A KEY TO THE PROFESSIONAL DEVELOPMENT OF THE
TEACHER - https://files.eric.ed.gov/fulltext/EJ1177051.pdf

One RF remarked that *"Indian English' was more difficult to understand than American English*". One RF (Af12 - TE) talked about using the blended mode in her own work as a mentor, wherein she provided in-person as well as online support to teachers, by connecting with them through a Whatsapp group.

RFs described their experience as mentees as mostly positive. They met their mentors through regular or need-based online meetings, Whatsapp, Telegram, and email. RFs found the AMs responsive, helpful, supportive, and involved, and said they received useful assistance related to proposal and report writing. *"AMs guided and advised RFs at every stage beginning with formulation of research question, to data collection and analysis, and writing report" (Af11 - TE)*, and provided reading material and suggestions. *"Contributions of AMs helped to critically shape the AR" (Af5 - TE)*, and *"helped RFs understand the conceptual and theoretical framework;' they gave useful feedback on fieldwork with teachers, and helped (RF) to 'change the strategy for cycle 2, when schools were about to close for winter" (Af1 - TE).*

A few RFs (2/15) said they received more support from their AM during proposal writing, but not much after, and there were delays in response toward the end, and 'responses were brief and general.'

Support from FMs was also generally deemed as being of value, by most (13/15) RFs. FMs were very accessible and supportive, and frequent, unlimited interactions with them were possible. FMs helped RFs at all stages of the AR, and contributed to problem solving, access to resources (links, digital books), and provided useful feedback.FMs even helped with making field work plans, and facilitated practical solutions to problems that came up. They advised RFs about data collection tools, and intervened with school authorities (AF8-Acadimic and professional member of TPD with the MoE) when needed, and advised during all stages of implementation and report writing, and formatting presentations. FMs gave feedback on reports, and even translated for RFs during meetings with AM. Some FMs helped with editing and proofreading reports. RFs *"learned from the example of FMs" (AF4- TE).* Two (of 15) RFs said they received minimal support from their FMs, who were mostly unavailable.

RFs described their own activities as mentors at length. They said they emulated the positive attitude and practices of their own mentors, when working with teachers, and many RFs provided in-person as well as online support (13/15), the frequency depending on the location of teachers. Online support was not possible for two (of 15) RFs because teachers they mentored did not have smartphones , or access to the internet. While mentoring teachers, RFs helped with lesson planning, access to learning and teaching material, feedback on class observations, and even modeled classroom management practically, and collaborated in classroom teaching and problem solving. All Afghanistan RFs conducted short TPD workshops as part of their intervention. Other activities of individual RFs included teaching mentees to use ICT for education,

providing training in specific instructional strategies such as storytelling, building capacity of teachers in class management and inclusive teaching, primary level math teaching using easily available low/no-cost teaching and learning material, teaching English language speaking, and other topics. One RF said she developed such good rapport with her mentee teachers, that they would invite her to observe their classes to witness the desired changes in teaching methodology.

In the case of all RFs, physical meetings for mentoring were more frequent in research cycle 1 than in cycle 2. Owing to delays in starting fieldwork, by the end of the first cycle of research work, annual exams started in schools across many parts of Afghanistan. Consequently, some RFs had to modify and adapt their work plans. Several (9/15) RFs expressed the need for more time to implement their intervention effectively, and suggested that such action research based professional development support should begin at the beginning of the school year. Future areas of mentoring proposed by different RFs included lesson planning, class management, and teaching methodology.

Discussing mentoring as a mode of TPD in Afghanistan's context, the general opinion was that it would work, and would be effective. Both online and in-person mentoring were valued, and either or both modes could be used, depending on access to basic technology in specific areas. However, there was general consensus that in-person mentoring is more useful. Some workable models of mentoring proposed by RFs included in-class mentoring of inexperienced teachers by more qualified senior teachers, more frequent school visits and online contact of teacher educators, or/and by creating online teachers' groups for peer mentoring and collaborative learning. Mentoring should involve class observations, presentations, coaching, and reflection.

One male RF believed that mentor and mentee should be of the same gender and share a language to be more effective. In his words, *"Women work better with women, and men with men" (AF11 - TE)*. Another RF felt that in Afghanistan's context, needs were too many and material and human resources were limited. He opined that while of value,

"mentoring individual teachers takes too much time. There are 300 teachers in Helmand, and developing all of them through mentoring, would take many years. TPD workshops for large groups of teachers are, therefore, more practical, and better to solve the general problems of education in the province". (AF3 - M&E Member MoE)

Findings from quantitative data were similar to those from qualitative interviews.

The scale "Mentoring-skill and qualities to be an effective mentor" consisted of 13 items on different aspects of mentoring. The Cronbach alpha is 0.937305 and 0.561226 for baseline and endline scale, respectively. On mean comparison of baseline and endline, the paired t-test is 0.005 at 0.05 level of significance. The t-test indicate significant

difference between baseline and endline response. It is found that all the items show positive change, in favour of mentoring skills and qualities. On further analysis to quantify change, Cohen's d method is used to compare mean. Change was found to be in the large category in 'provide constructive and non-judgemental feedback to the mentee, good at eliciting responses and getting the mentee to think and reflect, show interest in development of the mentee, good at observing & reflecting on teaching practices and good at showing/demonstrating solutions to the mentee. The moderate category change was found in 'sharing knowledge, skills, experiences and learnings with the mentee, listening actively to the mentee, encouraging and motivating mentee to think and reflect, and being willing to put aside one's own beliefs and/or prejudices, having expertise in the area of mentoring, good at setting realistic goals for the mentee, introducing timelines and stages for a classroom based exploratory action research project and address queries/worries of the mentee (refer to Appendix 7).

The qualitative results indicated that the fellows of research in Afghanistan possessed some knowledge about mentoring and its value and were willing to act as mentors. Mentoring became a term that was used to describe the practice of providing guidance, advice, and support to inexperienced people. Quantitative results indicated improved levels of mentor skills and attributes at baseline to endline. The qualitative and quantitative data show that mentoring has a positive result on the understanding of fellows and mentoring skills development.

3.5 Social Learning (includes PLCs & collaboration)

Professional Learning Communities (PLCs) provide an environment that encourages professional development, collaboration and innovation among teachers.[4] Professional learning communities were further defined (Hoaglund et al., 2014) as a group of educators working 'collaboratively in an ongoing process resulting in better student achievement.'[5] This definition could be extended to teacher educators for their own professional development.

At baseline, all professional meetings and informal exchanges with colleagues along with more formal professional groups and associations, were clubbed as professional learning communities and networks by respondents. There was unanimous agreement that interactions between practitioners about work-related issues and learning, contributed to professional development, or to problem solving, and hence an improved

[4] Benjamin D. B., Rolanda S. H., and Gwendolyn K. The Effective Implementation of Professional Learning Communities - https://files.eric.ed.gov/fulltext/EJ1194725.pdf

[5] Benjamin D. B., Rolanda S. H., and Gwendolyn K. The Effective Implementation of Professional Learning Communities - https://files.eric.ed.gov/fulltext/EJ1194725.pdf

education experience. In person meetings were found to be more useful and practical than online groups due to chronic power shortage and poor internet connectivity in many parts of the country. All Afghanistan RFs said they engaged in social learning by the end of the MATPD.

In the endline interview, respondents described their level of professional interactions with peers and other participants of the program, and the extent to which such social learning contributed to building their professional capacity. They also described any social learning avenues being used by the teachers they had mentored during their action research.

All RFs had participated to a greater or lesser extent, in the Telegram groups created for interactions between MATPD participants from the three countries - Nepal, Maldives, and Afghanistan, as well as with the TISS team. Interactions with peers and mentors within Afghanistan were quite frequent via Telegram, or WhatsApp, or via direct phone calls or emails, usually for collaborative learning; RFs reported using these channels to seek help or advice from their peers, mentors, or SCA team members, to solve problems in their AR, to share resources, or to discuss plans or activities. Social and professional exchanges with RF from other participating countries however, were minimal, limited to the odd response to any observations shared on the group chat. Though recognised as an important inter-country learning opportunity, a majority of RFs (13/15) said they had made no real professional contacts among the RF from Maldives or Nepal. One RF described her diffidence initially, in engaging in professional discussions with RFs from other countries online during and after a webinar. However, she gradually gained enough confidence to be able to offer her own reactions or comments. This diffidence, though not articulated by other RFs, may have been shared by many other RFs, who found online social learning with RFs in Nepal and Maldives unfamiliar, or they may merely have felt less confident communicating in English.

RFs hoped to continue their communication with other MATPD participants after the end of the project, with a few (3/15) planning to do so to improve professionally. They remarked that interaction and activity on online professional groups like the Telegram or WhatsApp groups could increase, if more useful resources were shared, which benefited practitioners, or if every member of the group was assigned responsibility for presenting experiences and ideas with other members.

Though interested in sharing their fellowship experience and learning with other colleagues in their workplace, most RFs (14/15) had not had opportunity to share their learning with other professionals and peers. RFs working with the MoE were hoping for the opportunity to formally share their experience and newly gained insights with their colleagues, but had shared them informally with some coworkers. One RF said she had started sharing her new professional learning with the teachers in the schools she worked with.

RFs agreed about the value of social learning for teachers, and described using WhatsApp and Messenger groups to connect with mentee teachers to support them during their AR, by giving advice and checking on their progress.

The support groups with mentee teachers were also used by a few RFs (3/15) to share teaching and learning resources, and to plan and schedule collaborative activities and observation visits. Some RFs tried to encourage participating teachers to share their successes or problems in class with other teachers through these WhatsApp groups, but found teachers reluctant to do so. As one RF explained:

"I asked teachers frequently to share their class experiences but they were reluctant to share their experiences with other peers, because they don't want their peers to know their weaknesses. Building trust and support needs time". (AF8 - Academic and Professional Member for TPD in MoE).

As she rightly pointed out, because the intervention in the field was completed in just a month or so, there was not enough time to build a community of professional support among the teachers, where they could share their problems and questions with peers with confidence, and support each other professionally.

Quantitative data analysis corroborated the qualitative findings. The professional learning community's theme consisted of 7 dichotomous (Yes/No) items. Except for 'Teacher/Teacher Educator conferences' all other aspects indicate positive change towards Professional Learning Communities (PLC) such as staff meetings at school/teacher education institute, Subject and theme-specific teacher/teacher educator groups, district and national level meetings and committees of school/institute functioning.

The 'engagement in collaboration activities', consisted of 16 items. The Cronbach alpha for baseline and endline is 0.972 and 1.065 respectively. On comparing the mean, the difference found is significant. The paired t-test value p at alpha 0.05 level of significance is 0.000314. It indicates a significant difference between baseline and endline mean responses. The changes are positive, in favour of engagement and collaborative activities. On further analysis for Cohen's d, two items show large positive change related to talking to colleagues about what fellow think is important in education and discuss improvement and innovation of education with colleagues. On further analysis to understand the effect size through Cohen's d method, a moderate category of change was measured in 'talking about teaching problems with colleagues, share new teaching ideas, learning experiences and classroom teaching experiences with colleagues, discussed the construct (digital) teaching material, experiment with new teaching methods with colleagues and give lessons with peers/colleagues. A low category of change is evident in 'supporting colleagues in their teaching problems, writing a new curriculum with colleague, studying the student/student teacher

performance data with colleagues, preparing lesson plans with colleagues' (refer to Appendix 7).

Both qualitative and quantitative readings indicated to a significant improvement in the understanding and adoption of collaborative learning practices by participating research fellows

3.6 Reflection

Hibajene M. Shandomo, in his essay, The Role of Critical Reflection in Teacher Education, concludes that reflection has a critical impact on a teacher's s knowledge, skills, and dispositions, by blending learning through experiences with theoretical and technical learning to form new knowledge constructions and new behaviors or insights.[6]

Baseline interviews tried to gauge the understanding of RFs about reflection, the extent to which they used reflection for professional development, and the ways in which reflection was used. All RFs stressed the importance of reflection for improving professionally, but understood the activity, mostly as receiving feedback about work, from another professional. This understanding was shared by all 15 RFs. A few in their explanations, also used terms like 'evaluation', and constructive and 'destructive reflection.' One (of 15) RF referred to reflection as advice given by a senior or expert to a junior, about his work. A small number (2/15) of RFs said they had never received reflection (implying feedback) about their work.

When giving examples from their experiences of reflection, however, a few (3/15) RFs did mention some reflective practices. One RF said she was unaware that she spoke too fast in class, but when her students gave her this feedback, she recorded herself speaking in class, and realized that she did in fact speak too fast. This helped her see her problem and rectify it. Another RF described how he would give homework assignments, and use students' responses to the assignment to measure the depth of their understanding, and to decide whether further explanation or reinforcement of the lesson was needed. One FR also described using video recording of a teacher's lesson for reflection purposes, so the teacher could see and improve their teaching practice.

By end line, all Afghanistan participants had learned from the course on reflection, and engaged in specific reflection activities as part of their roles as students, researchers, and mentors, and had understood the benefit of reflection experientially. One RF said;

"At first I did not differentiate between reflection and feedback. Now I understand that I reflect on my own work. When I do a task, I think about it using the records to understand how useful my work was". ***(AF3 - M&E Member of MoE)***

Another RF described it as;

[6] Hibajene M. S. The Role of Critical Reflection in Teacher Education - https://files.eric.ed.gov/fulltext/EJ915885.pdf

"the process of exploring and examining ourselves, our experience, our actions that helps us (decide) how to move forward; it enables us to understand our ways". (AF6 - TEd)

Yet another RF talked about how reflection helped her improve professionally:

"Reflection is very important for contemplating and assessing your own actions. I always write reflection, to deconstruct the events and learn from the reasoning to improve. Teachers were also introduced to the idea (of reflection) and practiced it". (AF8- Academic and Professional Member for TPD in MoE).

Yet another RF used the analogy of a mirror to describe the use of reflection because it enables the practitioner to look back and observe their own performance, analyze action, gauge its effectiveness, and identify areas that need to change or improve, thus contributing to professional development.

All respondents agreed that reflection is important for improving professional practice. It helps practitioners in identifying strengths and weaknesses in their work, and enables progress and improvement. It helps them in analyzing new learning and applying it to specific contexts. One respondent stressed that reflection as a practice is important for not only teacher educators and teachers, but for students as well.

Afghanistan RFs described the reflection they practiced during their involvement with the MATPD. They reflected on the enrichment webinars, to extract understanding, and engaged in reflection at different stages of action research, pondered on findings, and discussed them with mentors, which helped in writing their AR reports. RFs described reflecting on class observation notes to plan subsequent actions needed. *They also wrote reflection journals, which was useful for keeping records of important activities for later reference (AF8 - Academic and Professional Member for TPD in MoE).* RFs felt that reflection helped them in identifying problems that needed to be resolved, and made it easy to remember the lectures during webinars. It was a mandatory aspect of fellowship and enabled sharing understanding with others in the group. In addition to individual reflection exercises, RF also interacted in informal groups to reflect on different aspects of the fellowship, which helped them progress in their research.

In the quantitative survey, the "Engagement in reflective activities" consists of 13 items on various aspects related to reflective practices by fellows. The Cronbach alpha for baseline and endline is 0.850295 and 0.763221, respectively. On further analysis of the mean, the paired sample two tailed t-test is 0.044123 at 0.05 level of significance. The p value is less than the alpha, so, there is a significant difference between baseline and endline mean. It is found that the majority (8 out of 13) items show a positive change in favour of engagement in reflective activities by the fellows. Cohen's d quantification of

change (Effect size) has been used to organize the engagement of fellows in reflective activities in two categories, that is moderate and low change.

Moderate change was found in 'self-reflection after taking the class, analyzing video recordings of lessons to improve teaching practice, discussing with students what they experience in lessons to improve teaching practice, visit lessons of peers/colleagues to learn from them, asking colleagues to observe some of the class to get feedback on teaching, ask students to fill the feedback form on lessons and through conducting a small research project into possible cause and solutions. Low change was found in 'participating in peer review meetings to learn from colleagues (refer to Appendix 7).

Thus both qualitative and quantitative data indicated a significant positive trend in reflective practices resultant from participating in the MATPD project.

3.7 Information Communication Technology (ICT)

Access to computers and other Information Communication Technology (ICT) equipment and tools for education is generally low in Afghanistan, both among individuals and institutions, owing to limited physical resources in schools, weak financial status of many families, and lack of connectivity and unreliable power supply in many parts of the country. At baseline, all research fellows in Afghanistan had phones/smart phones and some access to internet or mobile data. Mobile phones and laptop/computers were the most commonly used technological gadgets. Respondents used applications for group chats, such as WhatsApp, Telegram, Facebook, Messenger, etc., but only nine (of 15) RFs had access to, or owned a personal computer, laptop or a tablet outside of their place of work. Most schools in Afghanistan do not have computers for classroom teaching and learning, and many schools lack computers even for administrative and official uses, or in computer labs. Where there are computers in schools and the workplace, they are often used on a shared basis.

Access to digital devices and the internet is uneven across the country, and their use for teaching and learning, creating digital learning material for students, and interacting with teachers' communities online is not very common. Baseline survey data suggested that many RFs used ICT for professional development and other work-related functions, but these conclusions may be less than accurate due to the unreliability of survey responses at baseline., Responses to interviews provided more credible information about ICT use among Afghanistan participants, and have therefore been used to compare with their understanding and perspectives at end line.

Baseline interviews revealed that the most commonly used ICT devices among respondents were mobile phones, IPads/tablets, laptop computers and overhead projectors, the last two commonly used for professional development activities for teachers. Afghanistan's prevailing issues with connectivity and poor access to basic technology, makes distance learning inaccessible for a majority of practitioners. During the Covid-19 pandemic, the Ministry of Education did try some level of remote teaching and learning using education radio and TV, but with limited success, since even such basic equipment and power supply were not accessible to all. RFs and FMs recognized the value of online learning portals and university sites offering online degree and other programs, but these were not part of their own experience. They were familiar with Apps such as Zoom, WhatsApp, Messenger, and telegram, but recounted the challenges reliance on technology had, in the context of Afghanistan, e.g. lack of access to devices or to strong internet connectivity, poor and unreliable power supply, and lack of skills of users. At baseline, many RFs didn't believe technology-supported or distance learning would be possible in Afghanistan, and considered in-person teaching and professional development to be of more value and more effective, since it involved person-to-person direct contact and interaction.

All respondents gained some experience of attending lectures and webinars online after joining the MATPD programme, and were able to learn together with fellows and practitioners in Maldives, Nepal and India, which was a new experience. They learned that the use of ICT could enhance the quality of teaching and learning by enabling access to different kinds of information on the net for independent learning. While mentoring teachers in schools as part of their AR, some RFs used online resources to find solutions to teachers' problems, and even used You tube videos to demonstrate effective teaching practices to the mentee teachers.

Occasionally, a few RFs even used their phone to record and show students videos connected to their lessons in class, and found it increased student interest and engagement with the lesson. They believed that availability of ICT was a quick way to access unlimited information on any topic, and could enable teachers and trainers to develop interesting and relevant teaching material, making lessons easy to understand for students. ICT could potentially make it possible to reach teachers and students in remote areas, to provide teaching and training support, and to offer solutions to problems faced by teachers and students.

However, with the infrastructural challenges existing in the country, it was first necessary to ensure regular power supply and internet connectivity in all parts of the country. Teachers and teacher educators also need training in using ICT effectively, since most of them do not know how to use technology.

At the end line, Afghanistan participants endorsed the value of ICT for professional development of teachers and teacher educators, and even as a learning resource for students.

"*In countries where access to technology is adequate for everyone, teachers can learn about new teaching theories and techniques online, they can find learning material to use in class, and attend courses and webinars*". *(AF15 - Academic and Professional Member for TPD in MoE)*

In Afghanistan, access to technology is problematic, but RFs used it during the fellowship with varying levels of success. They had access to personal computers or laptops, I-pads/tables, or at the very least, smart phones, and they attended webinars and presentations by experts and other fellows, and learned from them. In some locations, they had weak internet connections, and complained that they were not able to use the webinars fully. RFs used applications like Google Scholar, You tube, and other online resources and online translation apps while doing their action research.

For profession development (PD) workshops, a vast majority of RFs used computers and projectors for their presentations, but some struggled with unreliable power supply (3/15), and lack of adequate resources (1/15). This and lack of access to internet connectivity are some of the persistent challenges in Afghanistan, to the use of ICT for teacher professional development or for teaching in schools. Consequently, while acknowledging the value of ICT use in education and PD, Afghanistan participants in the program were also conscious of the ground realities in their context, which may make use of blended approaches to PD and education impracticable in parts of the country for now. Some RFs opined that a blended approach to PD may be possible in urban parts of the country which have better power and internet connectivity.

RFs used online apps such as Zoom, Telegram, Google meet, and Messenger for their own professional development and communication, as well as browsed the net for scholarly articles for their research. They used computers and overhead projectors for PD workshops for teachers who participated in their action research, and Whatsapp or Messenger to communicate with and support teachers they mentored.

At least two RFs operating in remote parts of Paktika and Ghazni, could not use ICT to support their mentees, and had to depend solely on in-person mentoring. Overall, access to ICT in Afghanistan had not changed or improved, and a few RFs (3/15) insisted that given the circumstances in Afghanistan, PD for teachers and teacher educators was realistically more effective in-person.

It was evident to all RFs that ICT can be used for professional development of both teachers and teacher educators. As one RF put it;

"ICT is very useful for education and for all students, teachers, and teacher educators. Technology gives us access to answers; it can be a good laboratory (where there is lack of a physical laboratory), where we can observe practical experiments. It is a teacher of teachers and teacher educators. It is a resource for teaching and learning aids. Some applications about education can be used instead of physical school textbooks online". (AF3 - M&E Member MoE)

Most schools where RFs did their field work, lacked digital devices or internet connectivity, and some even lacked stable power. RFs used their personal devices such as smart phones, tablets, or occasionally computers, to present resources, coach teachers, and to assist them in teaching. School teachers usually had limited access to technology. Where teachers had smartphones, RFs formed online communities of learning with participating teachers via Whatsapp or Messenger groups, and provided professional and mentoring support. Some RFs reported that even after the end of the fellowship, they continued to be connected with the teachers who participated in their action research, via these Whatsapp groups, and teachers still consulted them, and asked for professional advice.

All RFs expressed their intent to continue using ICT in future where possible, for their own professional development, as well as for supporting other teachers and peers, to the extent possible. However, the situation in Afghanistan can be described as unpredictable at best. At the time of the end line interviews, one of the RFs, who is also a district education official said that they had recently received a new directive from the Ministry of Education forbidding all use of ICT in schools. While there was no clarity about its application at the time of the interviews, this may affect the possibility of expanding ICT use for education and professional development of educators and teacher educators.

Analysis of quantitative survey data about ICT use was in alignment with qualitative findings. The scale 'Beliefs about using Technology' consisted of nine items on different aspects of technology. The Cronbach alpha for baseline and endline are 0.600 and 0.713, respectively. Also, the paired sample t-test value (p) is 8.62371E-07 at 0.05 level of significance. The p value is less than alpha (0.05), that is, there is a significant difference perceived between baseline and endline responses. The changes are positive, in favour of strengthening beliefs about using technology. On further analysis for Cohen's d, one item shows moderate positive change, that is the fellows believe that integrating technology in teaching will improve classroom instruction and practice. However, low level of belief change happened in Integrating technology in teaching will improve classroom instruction and practice and increase collaboration among students.

The two negative statements were like relation of computer with laziness and use of technology to drawing out real life examples of concepts in textbook, the responses are

more towards agreement, that is, the respondents are in favour of disuse of technology (refer to Appendix 7).

3.8 Gender Equality and Social Inclusion (GESI)

The baseline survey asked some questions about gender inclusiveness, and access of education to children of different abilities and backgrounds. Historically, the idea of inclusive and gender–equitable education has been elusive, in Afghanistan, with policies and dictates changing each time control of the country changed hands. While a democratic set up was installed in the country during the last two post-Taliban decades (2002-2021), even the democratic principles adopted by the new government remained entrenched within the traditional social norms defined around religious, ethnic, and gender identities. That said, up until August 2021, when the Taliban regime took over control of the country, Afghanistan's Ministry of Education was striving toward socially inclusive and gender equitable education for all, and was in principle, investing effort towards education for all, in line with SDG 4. While there was concerted effort by the democratic set up and its education partners, to increase school enrollments of both boys and girls, more efforts to improve quality of education were needed. Despite spectacular gains in access to education for both boys and girls owing to various countrywide interventions, and the development of a 5-year National Education strategic Plan (NESP), according to a 2018 UNICEF report[7], 3.7 million school children were still out of school, 60% of them girls.

The inclusion of girls, minority groups, and children with disabilities remained below the desired levels.

The return to power of the Taliban (August 15, 2021), set in motion a spiral of regression for education as a whole, and for women's and girls' education in particular, with rapidly shrinking spaces for girls and women to get an education. Less than two years have seen the doors of schools and colleges close in the face of all girls.

The baseline survey for the MATPD was conducted in the first half of 2022, when the education sector was still somewhat functional, in particular, activities supported by the

[7] All Children in School and Learning GLOBAL INITIATIVE ON OUT-OF-SCHOOL CHILDREN Afghanistan Country Study – 2018 - https://www.unicef.org/afghanistan/media/2471/file/afg-report-oocs2018.pdf%20.pdf

NGO sector. According to two of the FMs, schools/teacher education Institutes were inclusive and allowed students with disabilities to study with other students, while two other FMs thought otherwise, believing schools were rarely inclusive. Responses of RFs and FMs suggested that even when accepted in mainstream schools, children with disabilities were discriminated against most of the time, and teachers were rarely trained to teach children with special needs. They also believed that girls weren't always treated equitably in school. Also, children from economically weaker backgrounds tended not to be treated equitably sometimes. Schools rarely have adequate infrastructure needed for students with disabilities, and teachers were rarely (to never) keen to help children with disabilities. Consequently, students with disabilities rarely, if ever, get adequate time from the teachers in integrated classrooms..

RFs at end line, were more cognizant of the idea of inclusivity, and more conscious of the barriers prevalent across schools in Afghanistan in the current context, in particular, those related to gender inclusiveness. One RF , defined inclusion as;

"Equal opportunities for all, without regard to their ability, gender, whether they are rich or poor, what language they speak, Shia or Sunni, what ethnic group they belong to. This applies to all situations. Inclusion is necessary for teacher, students, and everyone in society. We are all Afghan because we are from Afghanistan". (AF15 - Academic and Professional Member for TPD in MoE)

All RFs understood Gender Equality in Education and Social Inclusion (GESI) to imply that students of all socio-economic, regional, tribal and ethnic, language and ability groups, and genders have equal access to quality education opportunities, and are treated with equal respect and care. One RF (summed it up as;

"Accessibility for all citizens to their rights as humans. Respect for diversity in all groups without judgment or gender bias as human beings". AF8 - Academic and Professional Member for TPD in MoE)

Another RF described the meaning of GESI in education as;

"Inclusion is not just (about) male and female students or students coming from different parts of the country and families, but equal access of all categories of students from different families from different economic and education backgrounds, having easy access with their own individual differences, to teaching learning facilities is inclusion". (AF1 - TE)

One RF described inclusion as ensuring participation of all students, irrespective of social, economic, ethnic, and gender and ability differences, in all school activities inside and outside the classroom.

Another RF described the context more at length. According to him;

"Afghanistan has an education policy, that requires education to be the same for all Afghanistan people irrespective of ethnic groups, religious belief, gender, ability, social and economic status". (AF3 - M&E Member MoE)

However, this is far from the ground reality of the day. 'Gender has become a problem.' For the past two years, girls have been barred from school education beyond grade 6 indefinitely. 'Language exclusion is a problem because there is a group of Baluch and Turkman (minority students) who don't understand Dari and Pushto, and for whom there are no textbooks in their languages up to grades 3 or 4. Consequently, these groups have been excluded from education.'

Like any other setting, Afghanistan schools have children from all kinds of backgrounds sitting with each other and learning together. Children with disabilities have bigger challenges, and often end up marginalized; few children with mental or physical disability can go to school. Most of them stay at home. While integrated inclusive schools is a policy of the education system in Afghanistan, such diversity is not practicable in a majority of regular schools, which lack teachers with the required training, or infrastructure and facilities to cater to the special needs of such students. According to all RFs, public sector schools are mandated to accept diverse students. All students from different linguistic and ethnic groups, and different social and economic strata study together in Pushto and Dari. Some students with physical disabilities caused by polio also study in the same class groups. One RF identified a student, who was mentally behind, but the school or teacher was unable to provide any special facilities or individual support. Another mentioned a less common phenomenon, where a teacher was able to assist a hearing impaired student using sign language in a mainstream school.

Before the Taliban imposed restrictions, girl and boys students learned together in primary school classes, but this was discontinued, and now girls and boys study in different class groups, and are taught by teachers of the same gender, in most parts of the country.

Education in Afghanistan has been struggling with challenges on many fronts including lack of adequate material and human resources, underqualified and under trained teachers, poor and inadequate infrastructure, and social and cultural barriers, making access to education difficult for specific groups of students. Since the coming to power of the De Facto authorities, all these problems have intensified, in particular gender exclusion is rampant and mandated by the state. For the past two years, girl students beyond grade 6 have been barred from attending high school, and only women teachers are allowed to teach girls. These edicts have severely restricted girls' access to education. The number of women teachers in primary schools is inadequate in some parts of the

country, and male teachers may no longer teach girl students, which results in many girls being deprived even of primary education.

A majority of RFs (13/15) worked with teachers and students of the same gender as them, and they were prohibited from working with mixed groups of teachers. Female RFs who wanted to work with high school teachers, could not do so as girls in classes beyond grade six were not going to school. One male and one female RF had opportunity to work with male and female teachers, and in classes with male students, as well as those with female students. Under the De Facto authorities', even mention of 'gender' is taboo, and the possibility of gender inclusive education is a distant possibility.

Beside issues of gender, other kinds of exclusions faced within the education system are societal practices that normalize discriminatory behavior against minority groups, low ability students, and persons with disabilities, both within the school and outside. Consequently, children with disabilities may sometimes suffer from exclusion from some school activities, and children from ethnic, religious, and language minority groups, and even disabilities may face discrimination or even mockery at the hands of peers, and sometimes even teachers and staff. Another common practice of many school teachers, which was brought up by several RFs, is to include the most able group of students in class activities, often at the cost of students who struggle to learn. As stressed by one RF;

"raising awareness of students and teachers, and sensitizing them to the importance of respecting people of different abilities and groups, is critical for creating inclusive spaces for everyone in schools, and promoting peace". (AF9 - Senior Education Officer in NGO)

Mindsets in the education environment as well as in communities at large, need to be change and become more inclusive.

While there is the cultural side to problems of inclusion, structural challenges also cannot be denied in an education system that is acutely under-resourced, schools lack basic infrastructure, and teachers are under-paid, and lack the necessary skills and qualifications to handle diverse classrooms.

One RF summed up the challenges to diversity and inclusiveness as follows:

"Challenges are many because of social conditioning of children. There is a lot of discrimination based on gender, ethnicity and even ability in society. In the current situation, this discrimination is seen even more. We all know about discrimination against girls' education. The interpretation of authorities, of what is Islamic, is very narrow, and confronting authorities, is risky. I am very keen to do a research about

inclusive education but the ministry may not be supportive of research on inclusivity". (AF15 - Academic and Professional Member for TPD in MoE)

Female RFs in some parts of the country were only allowed to work with female teachers and girl students owing to the limits set by the system. Two RFs from Jowzjan province could work with secondary school teachers because local education authorities decided to keep girls' schools open despite edicts from the Center, and one female researcher used an alternative arrangement to school, to conduct her research. As a result, these RFs were able to undertake their action research with secondary school level participants and subjects. Male RFs generally worked with male teachers in boys only schools (except one).

Other criteria that determined the selection of teachers, was not so much diversity, as availability of teachers teaching the specific subject, grade level, other qualifications, and access to schools etc. Some RFs reported having mentees from different ethnic groups, but that diversity was incidental rather than intentional. Most likely, it was owing to their relevance to the research. One RF asked the school administrations to identify teachers to participate in his research, and they were mostly teachers who volunteered to participate in the study. Only one male RF worked with female teachers, because a majority of primary school teachers in his target province were women. While there is a clear official directive against male trainers / teacher educators working with female teachers, enforcement varies from place to place, depending on the individual in charge.

The most common form of classroom exclusion observed by many RFs was that teachers routinely focused their attention on a small group of quick learners in the class, who typically sit in the front rows, often neglecting to include and involve students sitting in the back of the room. The latter group of children may need more time or support to learn, or may just be timid and too shy to participate. This resulted in low performance of the excluded students, and a loss of interest and engagement owing to a sense of not being seen. RFs used a variety of strategies to draw the teachers' attention to the needs of such students. They interviewed teachers and interacted with students to understand the root of the problem. One RF concluded that the exclusion was not so much due to discrimination, but because the teacher lacked the skills and techniques they needed, to engage all students in the learning process.

Some level of exclusion was observed when a teacher taught in one of the two major languages in Afghanistan (Dari and Pushto), and a few students who were a local minority failed to understand the lesson, because it was not in their language. In one class, an RF observed a student with a hearing disability sitting in the back and struggling to follow the lesson, and brought it to the teacher's attention. The child was asked to sit in the front row, from where it was easier to hear the teacher; this improved her participation, and she received needed support. As part of their intervention, RFs

introduced teachers to the use of activities like group work, peer learning, educational games and role play to enable all students to participate in the learning process, thus ensuring inclusiveness. A few presented model lessons so the teachers could observe the strategies they adopted to ensure inclusion and participation of all students.

3.9 Teaching and Learning Practices

Perceptions about Teaching and Learning Practices (PLC) also evolved considerably over the course of the fellowship in Afghanistan, as the Afghanistan research team was exposed to multiple different ways to enhance teaching and learning practices for teachers and students. Given the acutely low resourced context of Afghanistan, where large numbers of teachers in schools are underqualified, there was unanimous agreement on the need for continuous teacher education and professional development support. Practical learning was emphasized over theoretical learning. Few RFs (3/15) suggested reading or studying by themselves as a way of learning for professional development.

Compared to the baseline, when the majority of Afghanistan RFs favored formal training workshops as the best way teachers can learn, deeming them easily scalable and suitable for enabling large numbers of teachers to master standard teaching practices, at the end line responses of the same Fellows were more nuanced in consideration of the possibility of benefitting from a combination of multiple sources and practices for learning. A few RFs (2/15) still felt that in Afghanistan's formal teacher training workshops were the only way thousands of untrained teachers could learn the basic skills and knowledge they needed to be able to provide an acceptable quality of education. However, all the other RFs recognised the potential of alternative avenues of teaching and learning, based on their own experience during the Fellowship.

Mentoring and coaching were recognised as a valued means of teaching and learning by many RFs (11/15). As one research fellow put it;

"I think teachers have been learning best by coaching and mentoring". (AF7 - Teacher Educator)

At baseline, though some RFs had a degree of familiarity with mentoring, their understanding was limited to the understanding that it meant providing initial support to a new teacher or staff member, to help them learn the work culture and procedures of the school or organization, this understanding was transformed during the Fellowship, when they experienced the roles of both mentee and mentor. As mentors they provided hands-on support to the teachers they mentored, working alongside them to develop

teaching material and lesson plans, and even co-teaching when needed. They also understood that long-term mentoring was needed to ensure learning by the mentee teachers.

Afghanistan participants were worried about ICT use for learning at baseline for a combination of different reasons including limitations of access and exposure to technology for a majority of people. However, by the end-line, they understood the value ICT use could have for learning, both for teachers and teacher educators, and even for students. Many RFs (7/15) mentioned it as a valued means of learning for teachers and teacher educators. Online resources could be used by teachers to upgrade their professional capacity. RF (AF4 - Teacher Education) suggested that some free of cost applications and software are available, *"which can be very much for teachers, so that they can utilize to update"* their professional capacity as teachers.' However, given the realities on the ground, more stress was on ICT use by teacher educators, so they can access educational resources and solutions for teachers.

Another teaching and learning practice that was valued highly was collaborative learning. Afghanistan RFs understood the importance of creating professional communities online or offline, where teachers can share their problems and successes and expand the volume of experiences they can learn from. Collaborating with peers as well as with more experienced teachers can contribute to their collective professional development. One research fellow emphasizes the need for collaboration, stressing on the importance of;

"*being a part of a community of practice, keeping contacts with educators or with other teachers, with experienced teachers as mentors*". *(AF6 - Teacher Educator)*

Another RF described how she collaborated with the teachers she mentored:

"*Earlier, we helped teachers to learn differently. When I visited a school and a teacher told me about a problem, I would give them a solution verbally. Now I (help them to) make micro plans to solve specific problems – for example lesson planning and how to use them*". *(AF3 - M&E member - MoE)*

Some RFs stressed the importance of teachers engaging in action research for their own learning. According to a RF :

"*teachers learn a lot of things because research is one of the way of learning from own practices*". *(AF6 - Teacher Educator)*

Qualities valued in a teacher educator also increased by end-line. Where at baseline a teacher educator was expected to be more experienced and qualified than teachers, and to be a trainer, by the end line, expectations increased and teacher educators were expected to be mentors, good listeners and observers, as well as collaborators. in addition to a sound understanding of planning, class management, inclusive education

strategies, sensitivity to student needs, and knowledge of psychology, teacher educators were expected to have good communication skills, patience, and proficiency in the use of ICT. They should be able to set learning objectives, create teaching and learning material. A research fellow believes:

"*For this, ongoing capacity development of teacher educators to stay update with advances in education is important*". *(AF-3 - M&E member - MoE)*

Section IV.

4.1 Discussion

The MATPD was a unique opportunity for a group of practitioners in Afghanistan's education sector, to experience and learn about alternatives to the conventional understanding of TPD in Afghanistan, which normally means in-service training workshops or seminars for teachers, conducted by the education ministry's teacher education directorate or by NGO partners of the Ministry of Education. Afghan research fellows (RF) learned from experts in other countries, and through exchanges with other practitioners from the region, who had some shared and some disparate perceptions and experiences. The RFs individually conducted action research in selected (mostly) government-run schools, identifying specific gaps and problems, and seeking and applying solutions to them collaboratively with the teachers involved. As project activities, all Afghanistan RFs believed their interventions were successful, and they were able to build the teachers' capacity to provide an improved learning experience for students. Some teachers chose to continue to remain connected to their mentors after the project ended. RFs also suggested participating teachers disseminate their newly learned skills and strategies with other teachers in their school.

Learning online was also a new experience for a majority of the research fellows in Afghanistan. The fact that MATPD responded specifically to teachers working in low resource settings, made it more relevant and easy to relate to. Research Fellows from Afghanistan, emerged from the project, having engaged in research, many of them for the first time, and had an immersive experience of supporting teachers by working together with them on specific issues.

Distance learning and mentoring were new to the cohort of Afghanistan fellows, and despite initial struggles with technology and connectivity issues as well as the language barrier, they recognized the potential it had for expanding professional capacity,

particularly for teacher educators. Distance learning modes were found to be more challenging for teacher professional development in the current situation, owing to lack of access to technology or connectivity, for a considerable proportion of teachers, particularly those who are located in rural and remote provinces. Most schools are severely under-resourced, and sometimes lack even the most basic teaching and learning tools such as textbooks; a vast majority of schools have no access to computers or other technology needed for distance learning. However, Afghanistan's participants in the project understood that more can be done than just the conventional teacher training workshops, and should be done for professional development, employing a combination of different modes, dependent on what is feasible in specific local contexts.

For delivering pedagogically rich distance teaching and learning experiences at scale, Afghanistan needs infrastructure, steady power connectivity, and affordable and consistent internet coverage in many parts of the country. The MATPD is one step in the direction of developing the professional capacity of teachers and teacher educators so that they can optimize the quality of teaching and learning available to school going children across the country.

4.2 Implications

The MATPD was a rich learning experience for the Afghanistan cohort of participants. Five field mentors and 15 teacher educators worked with 137 teachers across 63 schools spread over eight provinces of Afghanistan, and conducted action research in specific areas of interest. While this may seem like a small sample, in the extremely low-resource context of Afghanistan, where few teachers have access to higher education opportunity in-country or abroad, this learning opportunity proved to be of exceptional value, especially during a political upheaval in the country, when the future of education itself is unclear for students, teachers and others.

Training 15 teacher educators in multi modal formats of professional development, and completing 15 individual action research projects, was a significant achievement in its own right, and is expected to have some ripple effect, even if not very large for now. However, when opportunities for national dialogue on education teacher education open up, the experience and newly acquired skills of these teachers and teacher educators are likely to influence and shape teacher education and professional development practices.

A majority of fellows had limited confidence in the efficacy of distance learning and teaching modes for students, teachers, and teachers educators, owing to the poor access of most schools, and many teachers, students, and even teacher educators, to the necessary technology, connectivity, or even a reliable power supply. But they recognized the value of action research and effectiveness of mentoring, and collaborative professional development for teachers and teacher educators.

Given the political context of Afghanistan, and the generally top-down approach to policy making and change, adopted by the current group in charge, systemic changes and reforms in teacher professional development may take time. However, some positive change in behaviors and attitudes is inevitable, particularly among teachers and students who participated in the action research, and were exposed to innovative teaching and learning practices. Notwithstanding the short-term nature of the engagement, the expectation that at least a few schools or teachers will adopt newly learned practices that enhance the teaching in learning experience for them and their students, and may even influence other teachers around them.

4.3 Conclusion

The education sector in Afghanistan faces an uncertain future under the control of the current regime in charge of the country, and education for girls and women has been restricted for upwards of two years. In this context, the Swedish committee for Afghanistan (SCA), an international NGO working in the country for over four decades, joined the regional consortium for implementing the MATPD, from Afghanistan, and facilitated a valuable learning opportunity for a group of teacher educators and practitioners.

To discuss the impact of this research project on the Afghanistan cohort specifically, and teacher education and professional education in general, we need to refer to the research questions the project was designed around.

- How can Teacher Educators (TEs) and Teachers be enabled to take ownership of adapting and adopting the proposed innovation along with the support of relevant stakeholders in the education system?

The MATPD project Teachers and teacher educators who participated in the project were undoubtedly capacitated and enriched professionally, and took enthusiastically to the innovative strategies. Participating research fellows (RF), a majority of whom are teacher educators, understood the significance of a multi-modal approach to teacher professional development, especially in a country like Afghanistan, where the education sector is severely under resourced, both in terms of qualified personnel, and material and infrastructural resources. The RFs individually conducted action research in selected (mostly) government-run schools, identifying specific gaps and problems, and seeking and applying solutions to them collaboratively with the teachers involved. As project activities, all Afghan RFs believed their interventions were successful, and they were able to build the teachers' capacity to provide an improved learning experience for students. Some teachers chose to continue to remain connected to their mentors after the project ended. RFs also suggested participating teachers disseminate their newly learned skills and strategies with other teachers in their school.

That said, in the complex context of Afghanistan, the possibility of teachers owning and adopting innovations is possible to a limited extent. School administrations are under constant pressure to complete rigidly set curriculums, and that spills over onto the teachers, who struggle with inadequate basic teaching and learning resources, large groups of students and short class periods, and the expectation to complete textbooks within the school year. With the Ministry of Education under the leadership of the De Facto authority of the Taliban, the future shape of the education sector is unclear, and hence, no meaningful support is provided or expected from the Ministry. To enable teachers to truly adopt and adapt the innovations, they need more supportive spaces

where new and improved learning and strategies are encouraged. The education sector in Afghanistan under the new setup needs to have the space to create a stimulating environment for teacher professional development, which is open to suggestions for innovation and change.

- How can media and technology be used to enhance and develop leadership skills in TEs and teachers?

Afghanistan's education sector is acutely under-resourced and lacks adequate material and human resources to provide good quality basic education to all children. The situation is even more dismal in many remote rural parts of the country, where, schools that exist, lack qualified teachers, and the very basic teaching and learning material like textbooks and teaching supplies that are needed for ensuring a reasonable quality of education for school going children. In such a scenario, distance teaching and learning as well as TPD opportunities, would be the solution needed. For delivering pedagogically rich distance teaching and learning experiences at scale, Afghanistan needs infrastructure, steady power connectivity, and affordable and consistent internet coverage in many parts of the country. A majority of urban and rural schools do not have computers and other equipment that may be used by students or teachers.

For this to be feasible, extensive investment and political will is needed, both from the De facto authorities in charge, and international partners in the education sector. Countrywide pre-service and in-service training of teachers and teacher educators, in the use of technology for education is also a priority, so they can benefit from distance learning opportunities. In the current situation in Afghanistan, the potential of scaling is limited, but a beginning can be made by initiating advocacy with the education authorities, and proposing a pilot project for proof of its worth.

Until such positive changes are adopted, individual teachers and teacher educators, who have the means, must expand their own knowledge base, and share learning and resources with peers and other professionals they have professional contact or influence over.

- What are the levers for and barriers to delivering pedagogically rich distance teaching and learning experiences at a scale?

Afghan research fellows experienced online distance learning and professional development along with peers from Maldives and Nepal, from experts based in India, and engaged in their first ever action research. Their fellowship experience was a unique opportunity for an exchange of ideas and practices, with educators from other regional

countries and for immersive learning and experimenting with alternative modes of professional development than they had been used to hitherto.

Research Fellows engaged in a degree of distance mentoring with the teachers they supported by creating online communities with them on Whatsapp, Messenger, or other Apps they were familiar with, some of them continuing to stay connected with their mentees even after the project ended. Afghan Fellows and many of the mentee teachers appreciate the value of distance learning and professional development, particularly in the acutely low resource context of Afghanistan, where many remote village schools don't have any qualified teachers or trainers. The need is real, and the buy-in is there at the school level. However, the barriers of access to technology, low digital literacy, and social taboos associated with digital resources limit the possibility of distance and digital learning to a small proportion of urban dwelling educators. Another barrier, as reported by one of the research fellows at the end-line, was that the Ministry of Education had forbidden use of technology in schools.

There is need for extensive discussion and educating the education authorities about the benefit of technology use and distance education for it to be scaled

Though policy advocacy with a system still struggling to determine its own agenda may take time in Afghanistan, small changes in practice in the positive direction can be initiated, particularly with regard to mentoring and experience sharing among teachers and teacher educators through establishing informal and formal communities of practice.

4.4 References

1. Craig A. Mertler, Arizona State University Action Research as Teacher Inquiry: A Viable Strategy for Resolving Problems of Practice. https://files.eric.ed.gov/fulltext/EJ1314304.pdf
2. Bettyjo Bouchey, Jill Castek, and John Thygeson Multimodal Learning.
3. Elias R. M, Sizakele M. M. MENTORING: A KEY TO THE PROFESSIONAL DEVELOPMENT OF THE TEACHER. https://files.eric.ed.gov/fulltext/EJ1177051.pdf
4. Benjamin D. Brown, Rolanda S. Horn, and Gwendolyn K. The Effective Implementation of Professional Learning Communities. https://files.eric.ed.gov/fulltext/EJ1194725.pdf
5. Hibajene M. S. The Role of Critical Reflection in Teacher Education. https://files.eric.ed.gov/fulltext/EJ915885.pdf
6. All Children in School and Learning GLOBAL INITIATIVE ON OUT-OF-SCHOOL CHILDREN Afghanistan Country Study – 2018. https://www.unicef.org/afghanistan/media/2471/file/afg-report-oocs2018.pdf%20.pdf
7. Braun, V. and Clarke, V. (2006) Using thematic analysis in psychology. Qualitative Research in Psychology, 3 (2). pp. 77-101. ISSN 1478-0887

4.5 Appendix

ANNEXURE 1: BASELINE INTERVIEW QUESTIONNAIRE

Q1. What is your understanding of the MATPD project and your role within it?

Q2. As a teacher educator/teacher-how will you use the learnings from the fellowship in your practice and in mentoring teachers?

Q3. Why do you think professional development of teacher educators is important?

(a) In your opinion, what are some of the key skills and competencies required to be an effective teacher educator?
(b) How do you think the meaningful use of ICT can help enhance/strengthen the professional development of teacher educators?
(c) How do you think mentoring can help enhance/strengthen the professional development of teacher educators?
(d) How do you think Action Research can help enhance/strengthen the professional development of teacher educators?

Q4. What type of professional development activities have you been part of in the last 5 years as a teacher educator/teacher? Did this include any trainings on Action Research, Mentoring and ICT? What were the components of these training sessions?

(probe: courses/workshops/seminars/conferences/reading literature/online or face to face meet-ups with teachers/teacher educators, exchange programs/observation visits to other schools/teacher education institutes etc.)

(a) Describe your experience and learning?
(b) What has been the most valuable form of professional development for you and why?
(c) Was there something that you remember changing about your practice/something you did differently in your teaching after this professional learning experience?
(d) Please enlist some of the areas where you require professional development.

Q5.
(a) What does Action Research mean to you ?
(b) How do you think it can help address local contextual educational problems of teachers?

Q6.
(a) What does Mentoring mean to you ?
(b) Reflect on any experiences you have had of mentoring or being mentored.

- How did this benefit you as a mentor or a mentee?
- Was this a structured mentoring process (by government/school management/any other institution or organization) OR was this an informal mentoring session (by head teacher/other experienced teachers/teacher educators)

Q7. Are you part of any group for discussing educational issues/teaching learning for enhancing your own professional development? Are these:

(a) Physical meetups/online spaces? (probe: what online spaces-whatsapp, telegram , social media groups etc, how many people are part of the community)
(b) Formal spaces-Formal mentoring program in place by government/school management/any other institution or organization)
(c) Informal spaces-Informal sessions by head teacher/other teachers/teacher educator
(d) What kind of activities/discussion take place in the/these group
(e) Frequency of engagement.
(f) In what ways has engagement in the group helped you in improving your practice?
(g) Have you faced any challenges being part of the group?

Q8.

(Part A) What are the different modes of distance teaching that are used for professional development of teacher educators/teachers (teacher training)?

(Part B) What has your experience been of using ICT for

(a) professional development activities (training of teachers)
(b) constructive teaching-learning in the classrooms?

(Probe:)

1. tools used: only devices OR
2. apps like zoom, google meet etc. OR
3. high order applications/means like geogebra, kahoot, simulations etc.- aware/not aware of the tools)/ aware but not received any training)/received training on these but do not have resources or school support to use these in classrooms) OR
4. Any other tools used

How useful were these in your practice? Did you face any challenges in using ICT?

Q9. Give an example of any activity in which you collaborated with a teacher/ teacher educator? What did you learn from the experience? what will change in process/ interaction if you get a chance to collaborate again?

Q10. What is the role of reflection in improving one's professional practice? How often do you get a chance to reflect on your practice? Give an example of an activity that was useful in promoting reflection on the practice? How do you engage your students/ student teachers in reflection on their learning?

ANNEXURE 2: ENDLINE INTERVIEW QUESTIONNAIRE

Understanding of MATPD

This section focuses on understanding fellows' role in the SATE fellowship.

1. Now that you have completed the SATE fellowship, what do you think was your role within the MATPD Project?

Teacher Professional Development

This section focuses on fellows' learnings and experiences of the fellowship with respect to TPD. Questions are related to TPD experiences, teacher learning and collaboration.

1. What were the main aspects of the fellowship that were different for you? Please give examples.
Which aspects of the fellowship were challenging for you? Please give examples.
(a) How do you think teachers learn?

(b) Has there been any change in your thinking about teacher learning during the fellowship? Explain what and how?

1. (a) In your opinion, what are some of the key skills and competencies required to be an effective teacher educator?

   (b) Do you identify yourself as a teacher educator? Please give reasons.

2. Can you identify connections between fellowship and the different components that you were trained upon?

Action Research

This section focuses on fellows' understanding and experiences of conducting practice-based Action Research with teachers. Questions are related to experiences of carrying out AR, teacher participation & collaboration and conducting AR post-fellowship.

1. How was your experience of doing action research?

   (a) What new techniques and strategies of AR did you learn?

   (b) What components of the fellowship helped in conducting AR? (probe: if the fellow has had any previous experience of action research, ask him/her how this experience was different, what kind of knowledge - teaching of science / maths/other subjects?)

2. How do you think Action Research can help strengthen the professional development of teacher educators?
3. Please describe details of your work with the teachers for your Action Research.

(a) Activities that were done collaboratively versus those that were individually driven

(b) Adjustments that both you and teachers made to conduct Action Research

(c) What was the attitude of the teachers in the beginning and at the end of the Action Research? Please give examples.

(d)Methods used to encourage/motivate teachers to participate and conduct Action Research

(e) What kind of TPD workshop did you design for the teachers that participated in your action research study? (probe: workshop, workshop days, mode of workshop, tasks/concepts/pedagogy discussed in the workshop)

(f) Can you describe how the teachers implemented Action Research in the classroom?

(g) What did you change in the second cycle based on reflection and feedback of the 1st cycle?

(h) Were there any differences in the way different teachers implemented the intervention?

(i) Challenges faced in working with teachers and solutions to resolve the issues faced

4. (a) Do you think your Action Research intervention worked well? If yes, please give reasons.

   (b) Do you think there were any gaps/any aspects did not work well? If yes, please give examples.

5. Do you have any idea or any area where you intend to use Action Research in the immediate future? If yes, can you elaborate on it?
6. (a) What do you believe are the challenges that may prevent you /other teachers & teacher educators from engaging in action research as a routine part of their professional practice?

   (b) What do you think are some of the support mechanisms you need to make it part of your regular practice?

Mentoring

This section focuses on fellows' conception of mentoring, their learnings and experiences of the mentoring process, both as a mentee and a mentor.

1. How has your understanding of "mentoring" changed post the fellowship? Do you think mentoring is different from "monitoring"? If yes, how?

2. How do you think mentoring can help strengthen the professional development of teacher educators?
3. How will you use the learnings from the fellowship in mentoring teachers for their professional development?
4. What are the different skills and qualities you have acquired during the fellowship to be an effective mentor?

(Probe: to answer this question, please think about the mentoring course, your AM-FM interactions and your experience of mentoring the teachers for the Action Research study?)

5. Based on your experiences of being mentored, how different/useful was the blended mode of mentoring? (probe: in-person versus online (zoom) did language pose as a barrier for mentoring; if yes, then how?)
6. Has gender & seniority (experience) in any way impacted you as a mentee or in your role as a mentor to the teachers? (probe: easy/difficult to work with same gender/opp gender mentors/teachers)

Role as a mentee (being mentored by academic & field mentor)

(a) How often did you communicate with your (a) academic mentor and (b) field mentor? (probe: monthly frequency, if frequency of communication has been low, then why?).

(b) What suggestions given by your (a) academic mentor (b) field mentor have been critical in shaping your action research study? Please give examples. (probe: resources, ideas & strategy, contextualization, data, report writing, decision-making, did AM give any readings etc.)

(c) Has mentoring by AM & FM helped you in working effectively with the teachers for your action research study? If yes, please give examples.

(d) What problems did you face while working with your mentors? What further support would you have liked from them during the fellowship?

(e) What have been the advantages and challenges of having two mentors (academic and field mentor) and why? Please give examples.

Role as a mentor (mentoring participating teachers for action research)

(a) How often did you communicate with the teachers you mentored in your action research study? (monthly frequency and mode (online/offline/both)

(b) What kind of support/assistance did you provide to your mentee teachers? Please give examples. (probe: resources, ideas & strategy, contextualization, classroom implementation, lesson plan, etc.)

(c) Can you give examples of suggestions the teachers found helpful in implementing Action Research in the classroom?

(d) If you were to mentor your mentee again, what would you do differently and why?

9. Describe the mentoring model/process that will work in your country context?

Social Learning

This section focuses on understanding the nature of interaction amongst MATPD fellows and how these interactions have helped the fellows in their PD.

1. (a) Did you connect with any MATPD fellow within the country and across countries?

   (b) Do you plan to continue these interactions beyond the fellowship? If yes, In what ways?

2. (a) How did you engage in MATPD telegram groups, webinars, course related discussion forums?

   (b) did you get an opportunity to learn from other MATPD fellows?

   (c) Did you face any challenges/difficulties while participating in these MATPD Telegram groups? If yes, please describe.

3. How have you shared your action research experiences and learnings with other people? (probe: teachers/teacher educators/government officials etc.)
4. What platforms did you use to communicate with teachers for your action research study? What kind of discussion happened in these groups and how did they benefit the teachers? (probe use framework - whether it was used for administrative purpose or academic discussion on content and pedagogy through different modes - online/offline/calls/emails. Administrative : was the group used for giving information, direction, deciding about the dates etc.; Academic discussion: discussion about the content, the kind of misconceptions the students have about the content, pedagogic approaches and resources)
5. Were you part of any informal group with the MATPD fellows apart from the groups formed by the CORE MATPD team? If yes, what is the nature of interactions within these groups? What was the group used for? (probe: online/offline/calls/emails. Administrative : was the group used for giving information, direction, deciding about the dates etc.; Academic discussion: discussion about the content, the kind of misconceptions the students have about the content, pedagogic approaches and resources).
6. What should be done differently to increase participation and engagement of people (fellows/ teachers) in chat groups for future projects/collaborations?
7. Give an example of any activity in which you collaborated with a teacher/ teacher educator during the course of the fellowship for your professional development? What did you learn from the experience?

Reflection

This section relates to reflective practices learnt and adopted by the fellows after the SATE Fellowship.

1. What is the role of reflection in improving one's professional practice?
2. (a) Have you reflected upon the different components of the fellowship and how has this been useful to you (probe: courses, action research, enrichment webinar sessions, writing etc)?

ICT

This section focuses on understanding what the fellows learnt about ICT during the fellowship through courses, webinars, etc. and in what ways did they use these learnings

1. How do you think the meaningful use of ICT can help strengthen the professional development of teacher educators?
2. For your own professional development, what are the different types of digital tools/applications that you have used in this fellowship? Were any of these new for you? Did you face any challenges while using these? Please give examples.

(Probe: action research, training teachers, mentoring, classroom teaching etc.)?

3. (a) What are the different types of digital tools/applications that you have used in the classroom or for training teachers during the fellowship?

(b) What kind of challenges did you face while using these? (Probe: action research, training teachers, mentoring, classroom teaching etc.)? Please give examples.

4. (a) Can you give an example of how you will combine content, teaching approaches and technology for a lesson that you teach?

(b) Please state why you have selected this particular technology and how will you integrate it for meaningful teaching-learning to take place?

5. Do you think you will continue using and exploring ICT in your practice? If yes, in what ways?
6. Based on your experiences after the fellowship, how relevant are blended approaches for effective TPD in your context?

Gender equality and social inclusion (GESI)

This section focuses on understanding fellows perception of inclusion and diversity in their country- context and how these operate in their classrooms. We want to understand the various ways in which fellows have dealt with gender and inclusion-related issues in their AR.

1. What is your understanding of the term ‘inclusion’ in your context/country?

2. (a) What kind of diversity have you seen in your teaching experiences?

   (probe: social-gender, class & caste, minority and other ethnic groups, physical disability, and learning disability)
   (b) What are the challenges in addressing diversity?

3. AR & GESI

   (A) Selection of teachers

   - What was your criteria for selecting teachers for your Action Research study? (probe: gender, different social groups, disability?-probe reasons)

   - How many male and female teachers participated in your AR? (probe: if they mention that they worked with only male/female teachers-ask why?

   (B) Classroom Observation

   - What kind of inclusion/exclusion did you notice when you first observed the classrooms, prior to the implementation of the intervention? (probe: social-gender, class & caste, minority and other ethnic groups, physical disability, and learning disability)

   (C) Classroom Implementation

   - What kind of teaching-learning practices did you include in your AR to make the classroom more inclusive for the learners?

ANNEXURE 3: BASELINE AND ENDLINE SURVEY

(A) Survey 1: Professional development experience and beliefs of teacher educators

Q1. Please indicate your engagement in the below mentioned professional development activities in the last 5 years, as a Teacher Educator. You can select multiple options for each professional development activity listed below.

S.No		1-Not Participated	2-Participated	3-Resource Person	4-Designed the Training Program	5-Coordinator/ Organizer
1	Courses/workshops (e.g. on subject matter or methods and/or other education-related topics)					
2	Education conferences or seminars					
3	Observation visits to other schools					
4	Observation visits to other teacher education institutes					
5	Physical meet up in a network of teachers					
6	Being part of an online network of teachers					
7	Individual or collaborative research					
8	Mentoring and/or peer observation and coaching					
9	Reading professional literature (e.g. journals, evidence-based papers, thesis papers)					
10	Engaging in informal dialogue with peers on how to improve teaching					
11	Participation in Exchange programs (visit to other countries)					

Q2. Please indicate the frequency of engagement for the below listed professional development activities in the last 5 years, as a Teacher Educator.

S.No		Frequently (4 or more than 4 times in a year)	Sometimes (1-3 times in a year)	Never
1	Courses/workshops (e.g. on subject matter or methods and/or other education-related topics)			
2	Education conferences or seminars			
3	Observation visits to other schools			
4	Observation visits to other teacher education institutes			
5	Physical meet up in a network of teachers			
6	Being part of an online network of teachers			
7	Individual or collaborative research			
8	Individual or collaborative action research			
9	Mentoring and/or peer observation and coaching			
10	Reading professional literature (e.g. journals, evidence-based papers, thesis papers)			
11	Engaging in informal dialogue with peers on how to improve teaching			
12	Participation in Exchange programs (visit to other countries)			

Q3. Please indicate the frequency of engagement for the below listed professional development activities in the last 1 year (covid-19 pandemic), as a Teacher Educator.

S.No		1-Frequently (4 or more than 4 times in a year)	2-Sometimes (1-3 times in a year)	3-Never
1	Courses/workshops (e.g. on subject matter or methods and/or other education-related topics)			
2	Education conferences or seminars			
3	Observation visits to other schools			
4	Observation visits to other teacher education institutes			
5	Physical meet up in a network of teachers			
6	Being part of an online network of teachers			
7	Individual or collaborative research			
8	Individual or collaborative action research			
9	Mentoring and/or peer observation and coaching			
10	Reading professional literature (e.g. journals, evidence-based papers, thesis papers)			
11	Engaging in informal dialogue with peers on how to improve teaching			
12	Participation in Exchange programs (visit to other countries)			

Q4. Please indicate the frequency of your engagement in the below mentioned professional development activities in your career till now, as a Teacher Educator.

S.No		Frequently (4 or more than 4 times in a year)	Sometimes (1-3 times in a year)	Never
1	I read newly available material (e.g. through brochures or web sites of publishers or visits of exhibitions on teaching materials)			
2	I read professional journals or scientific literature			
3	I study subject matter exercise books and teaching materials, including manuals			
4	I visit digital communities of my subject matter			
5	I read about training opportunities (e.g. leaflets or web sites of teacher education institutes)			
6	I participate in training sessions conducted at my institute			
7	I participate in one-on-one coaching and mentoring in the classroom			
8	I participate in professional development activities outside the institute (e.g. courses, workshops, trainings, summer courses, networks)			
9	I visit conferences, seminars and meetings of my subject matter or professional association			
10	I participate in the face to			

	face meetings to build my network of teachers/ teacher educators			
11	I participate in online activities/ platforms to build my network of teachers/ teacher educators			
12	I engage in informal dialogue with peers on how to improve teaching			
13	I engage in field visits to other schools			
14	I engage in field visits to other teacher education institutes			
15	I participate in exchange programs (visit to other countries)			

Q5. Please indicate the frequency of your engagement in the below mentioned reflective activities as a Teacher Educator.

S.No		1-Daily	2-A few times a week	3-A few times a month	4-Once a month	5-Never
1	After class, I reflect on my lessons					
2	I analyze video recordings of my lessons to improve my teaching practice as a teacher educator					
3	I discuss with my students/student teachers what they experience in my lessons to improve my teaching practice as a teacher educator					
4	I visit lessons of					

	peers/colleagues to learn from them					
5	I ask my peers/colleagues to attend some of my lessons to get feedback on my teaching					
6	I discuss events in my teaching with others to learn from them					
7	I participate in peer review meetings at my school/teacher education institute to learn from peers/colleagues					
8	I analyze a problem in my practice thoroughly before choosing a solution					
9	I study artifacts (student homework, models, lesson plans, blackboard work) from students/student teachers to understand how my approach has worked					
10	I ask students/student teachers to fill out surveys for feedback on my lessons					
11	I deal with problems in my teaching by looking at what the literature says about them					
12	I use student/student teacher performance data to, where needed, adjust my teaching					
13	Once a problem or question arises in my teaching practice, I carry out a small research project into possible					

	causes and solutions					

Q6. Please indicate your engagement in the below mentioned collaborative activities as a Teacher Educator.

S.No		1-Daily	2-A few times a week	3-A few times a month	4-Once a month	5-Never
1	I talk about teaching problems with colleagues					
2	I support colleagues in their teaching problems					
3	I share new teaching ideas with colleagues					
4	I share learning experiences with colleagues					
5	I talk about the way I deal with events in my lessons with colleagues					
6	I talk to colleagues about what I think is important in education					
7	I discuss scientific educational theories with colleagues					
8	I discuss improvement and innovation of education at my school/teacher training institute with colleagues					
9	I use colleagues' teaching materials in my lesson					
10	I write a new curriculum with colleague					
11	I construct (digital) teaching material with					

	colleagues					
12	I construct testing and examination materials with colleagues					
13	I study student/student teacher performance data with colleagues					
14	I prepare lesson plans with colleagues					
15	I experiment with new teaching methods with colleagues					
16	I give lessons with peers/colleagues (team teaching)					

Q7. What have been the most valuable form(s) of professional development activities that you have participated in and why?

(B) Survey 2: Beliefs, knowledge and skills about ICT

Q1. Please indicate a "Yes" or "No" for the below questions on access and use of technology

S.No		Yes	No
1	Do you have a mobile/smart phone?		
2	Does your mobile /smart phone have internet access/data plan?		
3	Do you have any applications for group chats: whatsapp, telegram, facebook messenger etc.?		
4	Outside of school, do you have access to a computer, laptop or a tablet? (personal or owned by family members)rence between educational research and action research		

Q2. Since how long have you been using computers in the following places? (enter the number of years)

S.No		<1	1-2 years	2-5 years	More than 5 years	Does not exist
1	At school-computer lab					
2	At school-in classroom for teaching					
3	At school-office/admin use					
4	At home-for personal and official purpose					
5	At a computer center/cafe					

Q3. In the last one year, how often have you used these technology devices in the teacher education institute/school?

S.No		Do not have	Not in a working condition	Never used	2-3 times a month	Use it at least once a month	Use it almost everyday	NA
1	Mobile phone							
2	Laptop/Computer							
3	Smartboard							
4	Tablet							
5	LCD Projector							
6	TV							
7	Digital camera							
8	Overhead Projector							
9	CD/DVD Player							
10	Radio							
11	Satellite classrooms							

Q4. In the last one year, how often have you engaged in the below listed activities on the use of ICT for teaching-learning?

S.No		Do not have this	Not in a working condition	Never used	2-3 times a month	Use it at least once a month	Use it almost everyday	NA
1	Browsed/ searched the internet for personal use							
2	Browsed/ searched the internet to collect teaching materials to prepare lessons							
3	Use powerpoint /slides for presenting in conference/district meeting/other							
4	Created digital learning materials for studentsSearched for courses/ activities for professional development							
5	Searched for courses/ activities for professional development							
6	Interacted with online teachers' communities (including whatsapp groups)							
7	Documented your class-work using video/audio							
8	Used Smart-boards							
9	Taken clippings on mobile phone for showing it to students in classrooms							

Q5. Which of the following activities have you done using a computer/laptop in the last one year?

S.No		1 - Have done it without any difficulty on my own,	2 - Have done it on my own with some difficulty	3 - Have done it with difficulty, with lot of help	4 - Have never done it on my own or with help from others
1	Start a computer /Laptop				
2	Handle mouse				
3	Use word/note pad files				
4	Use powerpoint				
5	Type in English in computer/Laptop				
6	Save files				
7	Use spreadsheet				
8	Use paint brush				
9	Use Internet Browser				
10	Send emails				
11	Use hyperlinks				
12	Record audio/video on phone/camera				
13	Download and upload files on whatsapp				
14	Click pictures with digital camera				
15	Use simulations to demonstrate experiments virtually				
16	Program a task				
17	Use online maps				
18	Download & use apps on				

	mobile phone				
19	Book tickets				
20	Use videoconferencing				
21	Use geogebra to create lesson plans				
22	Create picture stories using text and image editing tools				

Q6. How would you rate your ability to use ICT for the below activities? [from 1 (new to me) to 4 (high ability)]?

S.No		1 New to me	2 Low ability	3 Moderate ability	4 High ability
1	I can find animations related to my course and deploy them				
2	I can find videos from Internet to support course content and have my students watch them				
3	I can create online personal BLOGs (i.e., blogger and wordpress)				
4	I can inform my students about computer ethics.				
5	I can effectively use search engines.				
6	I can use social networking services (i.e., Facebook, Twitter) for educational purposes.				
7	I can share instructional materials that I find online (via e-mail, Dropbox, Google Drive, etc.) with my students				

Q7. To what extent do you agree or disagree with the following statements regarding beliefs about use of technology? Please mark your answer for each statement given below.

S.No		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Integrating technology in teaching will improve classroom instruction and practice					
2	Instruction is most effective when teachers collaborate with other teachers or experts					
3	Availability of ICT resources increases my productivity and professional effectiveness					
4	Integrating technology in teaching can improve students' learning outcomes					
5	Computers make students lazy					
6	Computers help students grasp difficult curricular concepts					
7	Students create better projects with computers than with other traditional material.					
8	Integrating technology in teaching will increase collaboration among students					
9	Use of Technology is mostly for developing technical skills and it is not useful in applying or drawing out real life examples of concepts in textbook					

Q8. If you are already using computers and technology in classrooms, what has influenced your decision for the use of technology in your teaching? Please mark your answer for each statement given below.

S.No		Influenced to a large extent	Influenced to some extent	Not influenced at all
1	Seeing other teachers using it in their classes			
2	Other teachers sharing			

	examples of how they have used technology			
3	Resource support & mentoring provided by the School to use technology in classrooms			
4	Availability of working computers to apply my knowledge			
5	Professional development workshop for using technology			
6	Enthusiasm and interest of students & parents			

Q9. In your opinion, what is the extent of challenge posed by the following sources of difficulty, if you were to integrate computers/laptops in your teaching? Please mark your answer for each statement given below.

S.No		Extremely challenging	To some extent challenging	Not sure whether it is really a challenge	Not a challenge	Not a challenge at all, rather it is an opportunity to convert the scenario
1	Not enough computers/laptops in the computer lab					
2	Not enough training for the teachers to use computers/laptops					
3	Not enough opportunity to practice computers/laptops in curriculum					
4	Unstable/intermittent power supply					
5	Frequent crashing of computers or outdated computers					
6	Internet is too slow					
7	High cost of internet					
8	All students do not have access to computers/laptops					

9	Students are unable to connect due to poor/no connectivity					
10	Too many students in the class (difficult to give individual attention to students)					
11	Don't know how to use computers/laptop for the subjects I teach					
12	Leadership is not supportive					
13	Students are at different levels					
14	Computer teacher is not available					
15	Use of technology will take time away from completion of syllabus					
17	Use of technology will make it difficult to manage students in the class as they have difficulties with operation of a computer/laptop					

Q10. Which of the following strategies can provide a meaningful explanation of the concept of reflection of light? Please select all that apply.

(a) Animated video on the concept.
(b) Chart showing the reflection of light.
(c) Letting learners observe the reflection of light on a white paper screen and drawing conclusions.
(d) Asking closed-ended questions related to the concept.

Q11. Students from class 9 as part of the project work in the chapter on "Population and the influencing factors", collected data through a household survey on level of literacy in their area to find out correlation between literacy and occupations using spreadsheets. What kind of teaching method and which learning theory best reflects this example of student activity.

(a) Real life application of the concept of Correlation using Technology-Activity Based Theory of Learning.
(b) Real life application of concept of Correlation using Technology-Constructivism
(c) Survey method of learning-Information processing.

Q12. Identify the scenarios that make meaningful use of ICT. Please select all that apply

(d) Students creating a weather chart using spreadsheet to compare temperatures in 2 cities
(e) Students watch a video where a teacher is teaching poetry by reading it aloud
(f) Students conducting research about water usage in households in their area using google forms
(g) Students memorizing mathematics formulae displayed on a smartboard
(h) Students creating multimedia projects to learn the effects of natural disasters in India

Q13. In the context of Online Learning, which of the following is an example of Asynchronous Communication Tools?

(a) Moodle
(b) Telegrams
(c) Discussion Forums
(d) All of the above

Q14. Applications like Zoom, MS Teams, WebEx , etc are an example of:

(a) Asynchronous Communication Tool
(b) Synchronous Communication Tool
(c) Both (a) and (b)

(C) Survey 3: Knowledge, skills and beliefs about Action Research

Q1. To what extent are you familiar with the concept of Action Research? Please select one option.

S.No	
1	Not at all
2	To a small extent
3	To a moderate extent
4	To a great extent
5	To a very great extent

Q2. Please respond to the following statements based on your experience.

S.No		Not at all	To some extent	To a great extent
1	I have conducted action research during my pre-service program			
2	I have conducted action research at work			
3	I have read about action research			
4	I know the difference between educational research and action research			
5	I have mentored students/teachers to conduct action research			

Q3. What are the sources that have helped you gain an understanding & knowledge about Action Research? Please select all that apply.

S.No	
1	Discussion with colleagues
2	Journal articles
3	Books
4	Conferences
5	Webinars
6	Professional Development Training program(s)
7	Any other (please specify)

Q4. Please answer the below questions (a), (b) and (c) on Action Research based on your experience. In case you have not conducted Action Research, please put “Not Applicable” as the answer. (a) Share an example of action research conducted during pre-service. (b) Share an example of action research conducted at work. (c) Share an example of having mentored students (as a teacher/teacher educator)/colleagues on action research.

Q5. Given below are some statements about the concept of Action Research. To what extent do you agree or disagree with these? Please mark your answer for each statement given below.

S.No		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	An individual student can be studied for Action Research					
2	A group of students can be studied for Action Research					
3	A classroom can be studied for Action Research					
4	A school can be studied for Action Research					
5	A community can be studied for Action Research					
6	A Teacher Education Institute can be studied for Action Research					

7	Government functionaries (Education Department) can be studied for Action Research					
8	Action research helps develop new knowledge related to classrooms					
9	Action research helps to better understand how students learn					
10	Action research helps improve students' learning outcomes					
11	Action research helps to reflect and bring about a change in one's own practice					
12	Action research helps to take ownership in problem solving, constructing knowledge and one's own professional growth					
13	Action research enables schools to become effective learning communities					
14	Action research can only be done by individual teachers in their classroom					
15	Action research can only be done at school level and not at large scale					
16	Action research helps to base decisions about teaching and learning practices in data driven, classroom based research findings					
17	The Action research process is iterative					
18	Action research can be used to explore solutions for effective professional development of teachers					
19	Action research helps improve teacher educators/teachers' chances of promotion					

Q6. Given below are some of the challenges that teachers/ teacher educators face in carrying out Action Research. To what extent do you agree or disagree with these? Please mark your answer for each statement given below.

S.No		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Lack of knowledge about action research					

2	Lack of research (conducting literature review, data collection and analysis, critical thinking writing) competencies					
3	Lack of time to conduct action research					
4	Lack of mentoring, support and guidance					
5	Lack of support by school management					
6	Lack of personal interest and motivation					

Q7. How would you rate your ability to conduct Action Research… [from 1 (No ability) to 4 (High ability)]? Please mark your answer for each statement given below.

S.No		1	2	3	4
1	Formulate research questions				
2	Decide on appropriate research methods				
3	Design research tools (questionnaires, observation frameworks, etc.)				
4	Plan a research schedule				
5	Analyze data and draw conclusions				
6	Communicate findings				

Q8. Please select one of the below cases and explain how you would carry out Action Research. (only choose 1 case. For the other 2 cases, put "Not Applicable" as the answer)

Case I. A teacher maintains a teaching journal. After each class she notes down class responsiveness, activities students enjoyed or didn't enjoy, concepts that students found difficult to understand and so on. She reflects on these aspects and tries to incorporate these while planning and implementing lesson plans in her class.

Case II. A teacher doesn't understand why his students seem to find reading so difficult. He decides to observe his students and make notes during the various reading activities, then spends some time discussing the problem with them to find out how they feel about reading and what they find difficult. Based on this, he modifies his approach by introducing different ways to engage students to develop their reading skills. After several lessons, he asks his students if the reading activities have helped, and how, and how they feel about reading now.

Case III. The school witnesses a 30% drop out of students post completion of grade 5. The teachers engage in door to door visits to speak with students, parents and the community. They also discuss the issue with the local education officer. Based on their discussions, the teachers along with the school headmaster come up with an action plan to get students enrolled back into schools.

(D) Survey 4: Skills for teacher educators-mentoring, reflection and collaboration

Q1. Please respond to the following statements based on your knowledge and experience.

S.No		Not at all	To some extent	To a great extent
1	I understand what Mentoring means			
2	I have read about Mentoring			
3	I have experienced Mentoring since I have been a mentee			
4	I have experienced Mentoring since I have been a Mentor			
5	I have seen how Mentoring is done in professions other than teaching			
6	I have watched video about Mentoring			
7	I have had informal discussion with others about Mentoring			

Q2. To what extent do you think you possess these qualities and skills of being a mentor? Please mark your answer for each statement given below. [from 1 (new to me) to 4 (highly developed)]

S.No		1	2	3	4
1	Share knowledge, skills, experiences and learnings with the mentee				
2	Provide constructive and non-judgemental feedback to the mentee				
3	Listen actively to the mentee				
4	Good at eliciting responses and getting the mentee to think and reflect				
5	Encourage and motivate the mentee				
6	Show interest in development of the mentee				

7	Willing to put aside one's own beliefs and/or prejudices				
8	Have expertise in the area of mentoring				
9	Good at setting realistic goals for the mentee				
10	Good at observing & reflecting on teaching practices				
11	Good at showing/demonstrating solutions to the mentee				
12	Introduce timelines and stages for a classroom based exploratory action research project				
13	Help address queries/worries of the mentee				

(E) Survey 5: Knowledge and beliefs about professional learning communities (PLCs)

Q1. Are you part of any of these groups/communities for your professional development?

S.No		Yes	No
1	Staff meetings at school/teacher education institute		
2	Subject specific teacher/teacher educator groups (eg. Maths/Science/English)		
3	Theme specific teacher/teacher educator groups. (Eg. ICT, pedagogy, content)		
4	Teacher/Teacher Educator conferences		
5	District level meetings		
6	National level meetings		
7	National level meetings		

Q2. What kind of professional development activities have benefitted you the most from engagement in these kinds of groups?

(F) Survey 6: Beliefs about teaching learning process using GESI

Q1. Given below are a few statements describing classroom teaching & learning practices. Reflecting on your teaching experiences, please indicate whether you engage in these practices or not. Please mark your answer for each statement given below.

S.No		Yes	No	NA
1	Adapt the instruction language to that of the students			
2	Provide innovative and creative demonstrations to motivate students to listen as well as challenge them continuously through new material and enjoyable activities			
3	Use knowledge about students' daily life & culture for teaching-learning			
4	Provide opportunities for problem based and project based learning			
5	Ensure inclusive pedagogies (including lesson plans) which meet the needs of all students, including those with special needs			
6	Remedial teaching for students who find it difficult to understand & grasp concepts taught			
7	View mistakes as opportunities to improve the learning process			
8	Taking students' feedback about their learning process			
9	Encourage student participation in discussions			
10	Encourage students to ask higher level questions			
11	Reach out to peers/colleagues for their feedback on my teaching instruction and practices			

Q2. Given below are a few statements describing classroom teaching & learning practices. Reflecting on your teaching experiences, please indicate the frequency of engagement in these practices. Please mark your answer for each statement given below.

S.No		Daily	A few times a week	A few times a month	Once a month	NA	Never
1	Adapt the instruction language to that of the students						
2	Provide innovative and creative demonstrations to motivate students to listen as well as challenge them continuously through new material and enjoyable activities						
3	Use knowledge about students' daily life & culture for teaching-learning						
4	Provide opportunities for problem based and project based learning						
5	Ensure inclusive pedagogies (including lesson plans) which meet the needs of all students, including those with special needs						
6	Remedial teaching for students who find it difficult to understand & grasp concepts taught						
7	View mistakes as opportunities to improve the learning process						
8	Taking students' feedback about their learning process						
9	Encourage student participation in discussions						
10	Encourage students to ask higher level questions						
11	Reach out to peers/colleagues for their feedback on my teaching instruction and practices						

Q3. Given below are some statements describing classroom teaching & learning practices. To what extent do you agree or disagree with these? Please mark your answer for each statement given below.

S.No		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Direct transmission of knowledge is the right approach to teaching					
2	Teacher and text are primary authorities on knowledge					
3	Effective/good teachers demonstrate the correct way to solve a problem					
4	Students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved					
5	Instruction should be built around problems with clear, correct answers, and around ideas that most students can grasp quickly					
6	Students learn best by finding solutions to problems on their own					
7	Use of groups for collaboration on tasks with instructions to foster collaboration among students					
8	How much students learn depends on how much background knowledge they have; that is why teaching facts is so necessary					
9	A quiet classroom is generally needed for effective learning					
10	Good teachers always know more than their students					
11	My role as a teacher is to facilitate students' own inquiry					
12	Thinking and reasoning processes are more important than specific curriculum content					
13	Students from poor homes tend to struggle learning in schools.					
14	Students whose parents are well educated and students whose parents are not well educated face the same level of difficulty in learning.					
15	Boys are more interested in learning than girls.					

16	Every one can learn irrespective of their gender or status					

Q4. Please respond to the following statements based on your experience of schools/teacher education institutes in your country

S.No		Most of the times	Sometimes	Rarely	Never
1	Schools/Teacher Education Institutes are inclusive as they allow students with disability to study with other students				
2	There are separate schools for students with disability				
3	There are special educators for students with disability				
4	There are adequate infrastructural resources for students with disability in the schools				
5	The teachers are trained in methods and pedagogy that can support learning of students with disability				
6	Teachers are keen to help the students with disability				
7	Parents are interested in education for children with disability				
8	Students with disability are discriminated against in the society				
9	Girls are given equitable treatment in schools				
10	Economically weak students are given equitable treatment in schools				
11	General education teachers are adequately prepared in teacher education to address learning issues of students with disabilities				
12	Students with disabilities get adequate time from the teachers in the integrated classrooms				
13	Students with disabilities are not preferred in integrated classrooms due to their behaviour problems.				
14	Students with disabilities and economically weaker sections get extra time and assistance from the				

	teachers.				
15	All the students irrespective of their gender, class and ability get the opportunity to express their ideas/opinions in the classroom.				

ANNEXURE 5: CODE INDEX - BASELINE

S.No	Theme	Codes	Code Description
1	MATPD		
		MATPD-UN	Understanding of the MATPD Project
		MATPD-ROLE	Role of the fellows/FMs in the MATPD Project
		MATPD-LEARN	Application of MATPD project learnings into one's own practice/area of work
2	Professional development of teacher educators (PDTE)		
		PDTE-IMP	Importance of professional development of teacher educators
		PDTE-SKILLS	Key skills and competencies required to be an effective teacher educator
		PDTE-GEN	General details/scenario regarding professional development of teacher educators in the country
		PDTE-CLMG	Training /professional development on classroom management for teacher educators
		PDTE-AR	Action Research to enhance/strengthen the professional development of teacher educators
		PDTE-MENT	Mentoring to enhance/strengthen the professional development of teacher educators
		PDTE-ICT	Meaningful use of ICT to enhance/strengthen the professional development of teacher educators
		PDTE-CON	Training /professional development on content for teacher educators
		PDTE-PED	Training /professional development on pedagogy for teacher educators
		PDTE-CEN	Training /professional development on 21st century skills for teacher educators

		PDTE-OTHER	Training /professional development on any other theme/topic for teacher educators
		PD-NEED	Area where professional development is needed
3	Professional development of self (SEPD)		
		SEPD-EXP	Experience of being part of various PD activities
		SEPD-TYPE	Listing/names of various PD activities
		SEPD-GOVT	PD programs were conducted by the government
		SEPD-PRIVATE	PD programs were conducted by the private sector
		SEPD-CON	PD on subject related content
		SEPD--PED	PD on subject related pedagogy
		SEPD-CLMG	PD on classroom management
		SEPD-CEN	PD on 21st Century Skills
		SEPD-CHI	PD on child rights, child protection, child development, child psychology
		SEPD-AR	PD on Action Research
		SEPD-MENT	PD on Mentoring
		SEPD-ICT	Respondent is talking about his/her professional development related to ICT
		SEPD-OTHER	PD on another topic/theme
		SEPD-TL	Implementing knowledge/skills etc. from trainings/professional development programs for classroom teaching-learning
4	Teacher Professional Development (TPD)	TPD-GEN	General details/scenario regarding professional development of teachers in the country

		TPD-CON	PD on subject related content
		TPD-PED	PD on subject related pedagogy
		TPD-CLMG	PD on classroom management
		TPD-CEN	PD on 21st Century Skills
		TPD-CHI	PD on child rights, child protection, child development, child psychology
		TPD-AR	PD on Action Research
		TPD-MENT	PD on Mentoring
		TPD-ICT	Respondent is talking about the professional development of teachers on ICT
		TPD-OTHER	PD on another topic/theme
		TPD-LG	Local Government-training of teachers
		TPD-BUD	Budget for training of teachers
5	Action Research (AR)		
		AR-DEF	Definition of Action Research
		AR-SOL	Using Action Research to solve local contextual problems
		AR-EG	Sharing examples of Action Research conducted
		AR-Chall	Challenges in conducting Action Research
6	Mentoring (MENT)		
		MENT-DEF	Definition of mentoring
		MENT-MENTOR	Sharing experience/example of being a mentor
		MENT-MENTEE	Sharing experience/example of being a mentee
		MENT-INFOR	Mentoring is informal

		MENT-FOR	Mentoring is a formal structure
7	Professional Learning Communities (PLC)		
		PLC-NO	Not part of any Professional Learning Community
		PLC-ONL	Online Professional Learning Community
		PLC-PHY	In Person Professional Learning Community
		PLC-FORM	PLC-It is a formal group
		PLC-INFORM	PLC-It is an informal group
		PLC-TPD	Discussion is around TPD
		PLC-ADMIN	Discussion is around admin issues
		PLC-RES	Discussion is around research
		PLC-OTHER	Discussion is around other issues
		PLC-FREQ	Frequency of engagement in a Professional Learning Community
		PLC-BEN	Benefit/usefulness of being part of a Professional Learning Community
		PLC-Chall	Challenges in being part of a Professional Learning Community
8	ICT		
		ICT-PD	Using ICT one's own professional development
		ICT-PDTE	Using ICT for training/professional development of teachers
		ICT-TL	Using technology for classroom teaching-learning
		ICT-BEN	Benefit of using ICT for teaching learning/training of teachers

		ICT-Chall	Challenges in using ICT for teaching learning/training of teachers
9	Collaboration		
		COLL-PD	Collaboration for one's own professional development, Sharing of experiences and examples.
		COLL-TT	Training teachers on the concept of collaboration
		COLL-OTH	Collaboration for any other activity
10	Reflection		
		REF-PD	Reflection for one's own professional development, Sharing of experiences and examples.
		REF-TT	Training teachers on the concept of reflection
		REF-STU	Reflection by students, Sharing of experiences and examples.
		REF-OTH	Reflection for any other activity

ANNEXURE 6: CODE INDEX – BASELINE

No.	Themes	Codes	Code description
Theme 1	**MATPD**		
1		MATPD-ROLE	*Role of the fellows within the MATPD project*
Theme 2	**PROFESSIONAL DEVELOPMENT**		
1		TPD-NEW	*Fellows' mention of concepts that were new to them*
2		TPD-DIFF	*Fellows' experiences of MATPD including aspects that were different & useful to them*
3		TPD-CHALL	*Fellows' experiences of MATPD that were challenging for them*
4		TPD-TR-LEARN	*Fellows' opinion on how teachers learn*
5		PDTE-SKILLS	*Skills & competencies required to be an effective teacher educator*
6		TPD-ID	*Fellows' identification as a teacher educator*
7		TPD-CON	*Fellows' understanding of the connections between the different themes /ideas in the MATPD project*
8		TPD-BL	*Fellows' thoughts & opinions about using blended approaches for effective TPD in their country context*
Theme 3	**ACTION RESEARCH**		
1		AR-EXP	*Fellows sharing their overall experiences of conducting Action Research*
2		AR-SUB	*Fellows sharing about the subject knowledge that they have gained as a result of working on that particular theme*
3		AR-PDTE	*Action Research to strengthen the professional development of teacher educators*
4		AR-TR	*Fellows' describing details of their work with the teachers for their Action Research.*
5		AR-WELL	*What went well in the fellows' Action Research*

No.	Themes	Codes	Code description
6		AR-GAP	*What were the gaps in fellows' Action Research*
7		AR-USE	*Fellows' ideas & thoughts about using Action Research in the future*
8		AR-PRAC-CHALL	*Challenges that will prevent fellows and other teachers/teacher educators from practicing AR*
9		AR-PRAC-SUPP	*Support mechanisms required to make Action Research part of fellows/other teachers' & teacher educators' regular practice*
Theme 4	**MENTORING**		
1		MENT-UN	*Fellows' understanding of mentoring*
2		MENT-DIFF	*Fellows' understanding of how mentoring is different from monitoring*
3		MENT-PDTE	*Mentoring to enhance/strengthen the professional development of teacher educators*
4		MENT-TR	*Using learnings from the fellowship in mentoring teachers for their professional development*
5		MENT-SKILLS	*Skills and qualities acquired by the fellow during the course of the fellowship*
6		MENT-BL	*Fellows' thoughts and opinions on how different/useful was the blended mode of mentoring for their AR*
7		MENT-BARR	*Fellows' talking about various barriers during their mentoring process. eg. language, context*
8		MENT-GEN	*Impact of gender & seniority in the process of mentoring, either as a mentee or a mentor, any other barriers like language etc.*
9		MENT-AM	*Fellows experiences with the AM (this will have to be double coded with either MENT-MENTEE or MENT-MENTOR*
10		MENT-FM	*Fellows experiences with the FM (this will have to be double coded) with either MENT-MENTEE or MENT-MENTOR*

No.	Themes	Codes	Code description
11		MENT-MENTOR	*Fellows' experiences of mentoring as a mentor during the course of the fellowship*
12		MENT-SCALE	*Fellows' ideas & thoughts about the mentoring model/process that will work in your country context*
Theme 5	**SOCIAL LEARNING**		
1		SL-MATPD-INTER	*Fellows' cross country interaction with each other for learning*
2		SL-MATPD-FORMAL	*Fellows' engagement in formal platforms to enhance their PD (MATPD telegram groups, discussion forum, enrichment sessions etc.) inclusing challenges faced*
3		SL-AR-SHARE	*Fellows sharing about their AR experiences and learnings with others*
4		SL-AR-TR	*Fellows sharing details obout the platforms used to communicate with their participating AR teachers*
5		SL-MATPD-INFORMAL	*Fellows' engagement with other fellows in informal groups (whatsapp, telegram, viber etc.) for the MATPD project*
6		SL-PART	*Fellows sharing ways to increase participation and engagement of people in chat groups for projects*
7		SL-COLL-PD	*Fellows' collaboration with any teacher/teacher educator for one's own professional development*
Theme 6	**REFLECTION**		
1		REF-ROLE	*Role of reflection in improving practice*
2		REF-EXP	*Fellows' experiences of reflection during the course of the fellowship*
Theme 7	**ICT**		
1		ICT-PDTE	*Meaningful use of ICT to help strengthen the professional development of teacher educators*
2		ICT-PD	*Digital tools, apps etc. used by fellows for their own professional development during the fellowship*

No.	Themes	Codes	Code description
3		ICT-TLP	*Digital tools, apps etc. used by fellows for classroom teaching learning during the course of the fellowship including challenges faced*
4		ICT-TRAIN	*Digital tools, apps etc. used by fellows for training teachers during the course of the fellowship including challenges faced*
5		ICT-TPACK	*Knowlege of TPACK in teaching learning in classroom setting*
6		ICT-USE	*Fellows using and exploring ICT in their practice in the future*
Theme 8	**GESI**		
1		GESI-DEF	*Fellows' understanding of the term Inclusion*
2		GESI-TLP	*Diversity observed in own teaching experiences within classroom setting*
3		GESI-CHALL	*Challenges observed/faced in addressing matters of inclusion within the classroom setting*
4		GESI-AR-TR	*Inclusion & diversity in fellows' **teacher selection** for their Action Research*
5		GESI-AR-CO	*Inclusion/exclusion & diversity observed while the teacher is taking the class **(classroom observation during AR)***
6		GESI-AR-PP	*Inclusive **pedagogical practices** adopted by fellows in their Action Research*

ANNEXURE 7: QUANTITATIVE DATA ANALYSIS

ICT

BELIEFS ABOUT USING TECHNOLOGY	BASELINE (N=15)		ENDLINE (N=15)		Cohen's d
	Mean	SD	Mean	SD	Effect Size
Integrating technology in teaching will improve classroom instruction and practice	4.5	0.88	4.7	0.48	0.28
Instruction is most effective when teachers collaborate with other teachers or experts	4.4	0.65	4.7	0.48	0.53
Availability of ICT resources increases my productivity and professional effectiveness	4.6	0.51	4.6	0.65	0
Integrating technology in teaching can improve students' learning outcomes	4.6	0.5	4.6	0.51	0
Computers make students lazy	4	1.08	4.2	0.89	0.20
Computers help students grasp difficult curricular concepts	4.2	0.8	4	0.41	-0.31
Students create better projects with computers than with other traditional material.	4.2	0.89	4	0.82	-0.23
Integrating technology in teaching will increase collaboration among students	4.2	0.73	4.3	0.63	0.15
Use of Technology is mostly for developing technical skills and it is not useful in applying or drawing out real life examples of concepts in textbook	2.9	1.26	3.4	1.12	0.42

*Cronbach Alpha (Baseline=0.600, Endline=0.713)

* Paired sample, two tailed t-test at 0.05 level of significance=8.62371E-07

Action Research

The action research component is consisted of three aspects. These aspects are “Familiarity”, “Ability to conduct action Research” and “Beliefs about various aspects of action research”. The familiarity aspect of action research consisted of one item. Similarly, ability and belief aspects comprised of 6 items and 19 items, respectively. These aspects are analysed and interpreted separately and the outcomes are further combined to create a holistic understanding of action research.

AR-Familiarity

FAMILIARITY WITH THE CONCEPT OF ACTION RESEARCH	BASELINE (N=15)		ENDLINE (N=15)		Cohen’s d
	Mean	SD	Effect Size	SD	Effect Size
To what extent are you familiar with the concept of Action Research?	2.9	1.09	3.9	0.76	1.06

AR-Ability

ABILITY TO CONDUCT ACTION RESEARCH	BASELINE (N=15)		ENDLINE (N=15)		Cohen’s d
	Mean	SD	Mean	SD	Effect Size
Formulate research questions	3.1	0.8	3.5	0.52	0.59
Decide on appropriate research methods	3.1	0.64	3.5	0.66	0.62
Design research tools (questionnaires, observation frameworks, etc.)	3.1	0.64	3.6	0.65	0.78
Plan a research schedule	3	0.64	3.4	0.51	0.69
Analyze data and draw conclusions	3.2	0.69	3.4	0.65	0.29
Communicating findings	3	0.82	3.5	0.66	0.67

*Cronbach Alpha (Baseline=0.679 , Endline=0.879)

* Paired sample, two tailed t-test at 0.05 level of significance=0.000291

AR-Belief

BELIEFS ABOUT VARIOUS ASPECTS OF ACTION RESEARCH	BASELINE (N=15)		ENDLINE (N=15)		Cohen's d
	Mean	SD	Mean	SD	Effect Size
An individual student can be studied for Action Research	2.7	1.1	3	1.22	0.26
A group of students can be studied for Action Research	4	0.71	4.5	0.66	0.73
A classroom can be studied for Action Research	4	0.82	3.9	1.18	-0.09
A school can be studied for Action Research	3.8	0.55	4.3	0.75	0.76
A community can be studied for Action Research	3.8	0.69	3.6	0.96	-0.24
A Teacher Education Institute can be studied for Action Research	4	0.71	3.8	1.14	-0.21
Government functionaries (Education Department) can be studied for Action Research	3.8	0.98	3.8	1.07	0
Action research helps develop new knowledge related to classrooms	4.5	0.66	4.5	0.88	0
Action research helps to better understand how students learn	4.5	0.66	4.5	0.87	0
Action research helps improve students' learning outcomes	4.3	0.75	4.5	0.66	0.28
Action research helps to reflect and bring about a change in one's own practice	4.2	0.83	4.3	0.63	0.14
Action research helps to take ownership in problem solving, constructing knowledge and one's own professional growth	4.2	0.69	4.4	0.65	0.29
Action research enables schools to become effective learning communities	3.7	1.4	4.1	0.76	0.36
Action research can only be done by individual teachers in their classroom	2.8	1.1	3.1	1.28	0.25
Action research can only be done at school level and not at large scale	2.8	1.1	2.7	1.25	-0.08
Action research helps to base decisions about teaching and learning practices in data driven, classroom-based research findings	3.8	0.89	3.9	1.04	0.10
The Action research process is iterative	3.2	1.01	3.5	0.97	0.30
Action research can be used to explore solutions for effective professional development of teachers	4.5	0.66	4.4	0.65	-0.15
Action research helps improve teacher educators/teachers' chances of promotion	4.4	0.77	4.4	0.96	0

*Cronbach Alpha (Baseline= 0.855, Endline=0.896)

* Paired sample, two tailed t-test at 0.05 level of significance=0.035309

Collaboration

ENGAGEMENT IN COLLABORATIVE ACTIVITIES	BASELINE (N=15)		ENDLINE (N=15)		Cohen's d
	Mean	SD	Mean	SD	Effect Size
I talk about teaching problems with colleagues	3.6	1.19	4.1	0.8	0.49
I support colleagues in their teaching problems	4.1	0.95	4.2	0.59	0.13
I share new teaching ideas with colleagues	3.4	0.96	3.9	0.95	0.52
I share learning experiences with colleagues	3.5	1.05	3.9	0.86	0.42
I discuss my classroom teaching experiences with my colleagues	3.2	0.99	3.8	0.8	0.67
I talk to colleagues about what I think is important in education	3.4	1.12	4.3	0.75	0.94
I discuss scientific educational theories with colleagues	3.15	1.21	3.1	1.04	-0.04
I discuss improvement and innovation of education at my school/teacher training institute with colleagues	2.69	1.37	3.6	1.03	0.75
I use colleagues' teaching materials in my lesson	3.5	1.51	3.5	1.26	0
I write a new curriculum with colleague	2.3	1.18	2.5	1.19	0.17
I construct (digital) teaching material with colleagues	2.2	0.83	2.6	1.19	0.39
I construct testing and examination materials with colleagues	2.8	1.3	2.8	1.21	0
I study student/student teacher performance data with colleagues	3	1.47	3.1	0.95	0.08
I prepare lesson plans with colleagues	3.5	1.6	3.6	1.19	0.07
I experiment with new teaching methods with colleagues	3.5	1.45	4	0.81	0.43
I give lessons with peers/colleagues (team teaching)	3	1.53	3.5	1.13	0.37

*Cronbach Alpha (Baseline= 0.972, Endline=1.065)

* Paired sample, two tailed t-test at 0.05 level of significance=0.000314

Mentoring

SKILLS & QUALITIES TO BE AN EFFECTIVE MENTOR	BASELINE (N=15)		ENDLINE (N=15)		Cohen's d
	Mean	SD	Mean	SD	Effect Size
Share knowledge, skills, experiences and learnings with the mentee	2.8	0.073	3.3	1.11	0.64
Provide constructive and non-judgmental feedback to the mentee	2.3	1.03	3.08	0.86	0.82
Listen actively to the mentee	2.8	0.98	3.5	0.88	0.75
Good at eliciting responses and getting the mentee to think and reflect	2.77	0.8	3.6	0.51	1.24
Encourage and motivate the mentee	3.5	0.52	3.7	0.48	0.39
Show interest in development of the mentee	3	0.91	3.7	0.85	0.79
Willing to put aside one's own beliefs and/or prejudices	2.9	0.86	3.31	0.85	0.48
Have expertise in the area of mentoring	2.7	0.95	3.31	0.95	0.64
Good at setting realistic goals for the mentee	2.9	0.95	3.31	0.48	0.54
Good at observing & reflecting on teaching practices	3	0.71	3.62	0.51	1.00
Good at showing/demonstrating solutions to the mentee	2.77	0.83	3.4	0.77	0.79
Introduce timelines and stages for a classroom based exploratory action research project	2.9	1.12	3.2	0.93	0.29
Help address queries/worries of the mentee	2.8	0.99	3.2	0.93	0.42

*Cronbach Alpha (Baseline=0.937305, Endline=0.561226)

* Paired sample, two tailed t-test at 0.05 level of significance=2.69E-07

PLC

ASPECTS	BASELINE (N=15)		ENDLINE (N=15)	
	Yes	No	Yes	No
Staff meetings at school/teacher education institute	8	5	12	1
Subject specific teacher/teacher educator groups (e.g., Maths/Science/English)	11	2	12	1
Theme specific teacher/teacher educator groups. (e.g., ICT, pedagogy, content)	8	5	12	1
Teacher/Teacher Educator conferences	7	6	7	6
District level meetings	5	8	9	4
National level meetings	3	10	5	8
Any committees of school/institute functioning	7	6	12	1

Reflection

ENGAGEMENT IN REFLECTIVE ACTIVITIES	BASELINE (N=15)		ENDLINE (N=15)		Cohen's d
	Mean	SD	Mean	SD	Effect Size
After taking the class, I self-reflect on how my teaching went	4.3	0.87	4.5	0.52	0.28
I analyze video recordings of my lessons to improve my teaching practice as a teacher educator	2.7	1.5	3.2	1.46	0.34
I discuss with my students/student teachers what they experience in my lessons to improve my teaching practice as a teacher educator	3.5	1.17	4.1	1.08	0.53
I visit lessons of peers/colleagues to learn from them	3.3	1.15	3.8	1.11	0.44
I ask my peers/colleagues to attend some of my lessons to get feedback on my teaching	3.2	1.34	3.8	0.96	0.51
I discuss my classroom teaching experiences with others to learn from them	3.9	1.16	3.7	0.75	-0.20
I participate in peer review meetings at my school/teacher education institute to learn from peers/colleagues	3.3	1.07	3.5	0.9	0.20
I analyze a problem in my practice thoroughly before choosing a solution	4.3	0.98	4.1	0.79	-0.22
I study artifacts (student homework, models, lesson plans, blackboard work) from students/student teachers to understand how my approach has worked	4.2	1.34	4.2	0.83	0
I ask students/student teachers to fill out surveys for feedback on my lessons	2.8	1.6	3.8	1.06	0.74
I deal with problems in my teaching by looking at what the literature says about them	4	1.4	3.8	0.62	-0.18
I use student/student teacher performance data to, where needed, adjust my teaching	3.6	1.38	3.3	0.98	-0.25
Once a problem or question arises in my teaching practice, I carry out a small research project into possible causes and solutions	3	1.48	3.7	1.07	0.54

*Cronbach Alpha (Baseline= 0.850295, Endline=0.763221)

* Paired sample, two tailed t-test at 0.05 level of significance=0.044123

TLP

BELIEFS ABOUT TEACHING-LEARNING PROCESSES	BASELINE (N=15)		ENDLINE (N=15)		Cohen's d
	Mean	SD	Mean	SD	Effect Size
Direct transmission of knowledge is the right approach to teaching	3.8	1.09	3.5	0.97	-0.29
Teacher and text are primary authorities on knowledge	4.3	0.75	3.3	1.03	-1.10
Effective/good teachers demonstrate the correct way to solve a problem	4.2	1.14	4.5	0.88	0.29
Students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved	4.4	1.19	4.3	0.85	-0.09
Instruction should be built around problems with clear, correct answers, and around ideas that most students can grasp quickly	4.7	0.48	4.6	0.65	-0.18
Students learn best by finding solutions to problems on their own	4.4	1.12	4.5	0.78	0.10
Use of groups for collaboration on tasks with instructions to foster collaboration among students	4.7	0.48	4.2	0.83	-0.74
How much students learn depends on how much background knowledge they have; that is why teaching facts is so necessary	4.15	0.69	3.7	0.95	-0.54
A quiet classroom is generally needed for effective learning	3.8	1.42	2.8	1.09	-0.79
Good teachers always know more than their students	4.2	1.24	4.3	0.95	0.09
My role as a teacher is to facilitate students' own inquiry	4.5	1.19	4.2	0.93	-0.28
Thinking and reasoning processes are more important than specific curriculum content	3.9	1.19	3.8	1.01	-0.09
Students from poor homes tend to struggle learning in schools.	3.8	1.17	3	1	-0.74
Students whose parents are well educated and students whose parents are not well educated face the same level of difficulty in learning.	4.1	1.26	2.6	1.4	-1.13
Boys are more interested in learning than girls.	3.6	1.89	2.1	1.04	-0.98
Every one can learn irrespective of their gender or status	4.08	1.26	4.2	1.01	0.11

*Cronbach Alpha (Baseline= 0.465871, Endline=0.829294)

* Paired sample, two tailed t-test at 0.05 level of significance=0.007398