

## CHOPPED-POT SITUATION IN TEACHERS DEVELOPMENT VIA ACTION RESEARCH TECHNIQUES IN CYBER ERA

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**Abstract.** *Chopped-pot (chop pot) is a poker term and a critical opening metaphor for this article. Applied action research steps and these extensions are necessary for practice during a pandemical situation in unstable and challenging teaching at universities in Czechia. Forms of teaching, personal contact and process of monitoring students' results have changed dynamically. Mass influence of pandemic situation stopped actions at schools and many institutions all over the world. In Czechia, there has been transferred all practical and cognitive (theoretical) subjects to cyberspace. Due to the lack of government information, public fear and low digital literacy level, students have been learning in virtual classes and individual consultations. Many of them have lost contact with their critical practice and opportunities to transfer their knowledge into the school environment. We tried to modify classical action research approaches to new conditions in cyberspace and use it for pre-service and teachers' innovation from an innovative perspective. In the methodological part, there is research presented from a full semester of gradual teachers' development. The constructed research tool was tested in virtual conditions and monitored activities and the progress of development in teachers' self-reflection for their future daily practice. The mixed design of research tools and a combination of the postproduction process of data open scientific feedback for their subjective inquiries in the individual personal development of educational staff in Czechia via action research model.*

**Keywords:** *action research, teachers' development, teaching & learning, self-reflection, university preparation.*

### Introduction

The long period of dogmatic teacher's preparation at universities has been banned/restricted by pandemical wave COVID-19. New restrictions have injected conditions of educational standards in Czechia without any warnings. These restrictions cause an unstable functional mechanism that supports students' development and guarantees them voluntary options of practical and applicable preparation in schools' environment. Face-to-face practical development is for future teachers, furthermore teacher in general, very important. Nowadays, it has been all moved to cyberspace. The pedagogical intense and educational field needs to focus on daily practice which is also supported by haptic knowledge,

transfer and life-experience in the educational institution. Daily greetings, social contact, experience sharing and feedback from more skilled mentors and academical staff have silenced. Adaptation on students' cyber preparation at the Faculty of Education at Palacký University in Olomouc (Palacký University, 2020) moved to virtual rooms, and teachers' professional competencies cannot fluently adapt to it. Suddenly, traditional ways of action research teaching and inquiry techniques were less attainable from couches and PC screens. Students' learning conditions were various, and many of them struggle with complicated elderly theoretical frameworks and dry theory of action research by themselves. The most complicated has been entry level of understanding what is now action research, factors, the influence of those practical applications to their professional work without touchable experience or full support inquiry feedback.

### **Action Research and 'Covidity' Pitfall in Education**

Preparation for education practice is tightly connected with the transposition of theory into a live experience. We accept original empirical and theoretical studies on important topics and their relation to practice. Hence, it is a pillar of elaborate pre-service preparation. Teachers must know how to do research in the school environment and effectively influence their teaching excellence. Teaching excellence positively influences the school environment and teaching skills, helping to understand the pragmatism of knowledge in real-time tasks. The action research is hidden in part of pre-service preparation. We may find many diversities which strategy is necessary to implement for our work. Mainly it is taken as a part of vague theoretical conceptualisation of participatory research with mixed general ideals of the action research phases.

In Czechia, there has been banned social contact and presence at the educational institution based on national evaluating strategy against COVID-19 threats called PES (MZČR, 2020). Students' are lost, and they have to deal with an enormous quantum of the best of the best literature approaches entirely alone. This advanced level of action research seems to be too much perfectionist for pre-service students' level without a lecturer explanation. Potential usage is gone due to the lack of teachers' informal language. Advance level of action research is fantastic for academical discourse on the flat ground at universities. The approach is perceived only as a utilitarian academical source. We must explain it merely by reduced theories to pre-service students, not by the cycles, but by the specific examples of good practice or results of action research plans. They cannot understand cycles in details and transform it into their cognitive development of teachers identity. Teachers' role in the school environment is between investigative creators, semi-researchers and as we call it in the informal labelling 'doubting Thomas (seekers)' of their daily endeavour.

Henceforth, open teachers' minds lead to better achievement in practice and push their skills to the next level in natural developing ways. Pre-service students may not always try new ways to change their actual knowledge in blank educational situations and stimulate their imagination.

### **Research & Action - Don't Let Me Be Misunderstood**

The current literature sources include definitions of existing paradigms of actions research conceptions that exclude each other. Action research presented in view of many Western authors' examples (Edwards-Groves, Grootenboer & Wilkinson, 2018; Reason & Bradbury, 2008; Waite, 1995) has much more practical value for better understanding than transposition from Czech authors (Richterová et al., 2020). The questionable situation is connected with linguistical roots in a definition of 'action' to the Czech meaning 'akční' which sounds to a student like dynamism to do something on the movement as terrain research, based action from a teacher, nor like act to change something. Taking actions in education is natural. It must also be connected with right inquiries and should lead to progressive results, which do not have to be only positive, e.g. to help to understand the subjectivity of the mechanism inside the self-reflective level of teaching skills themselves.

Action, not based on the movement or dynamism, presented by (Bill, 1998; Burnes, 2004) links to a planned cycle of movements. On the other hand, new coming authors (Chudý & Kropáč, 2019) represent the contradictory mindset. Action research is not just about fully complementing the circle of actions or movements, albeit students finish their partial phases of planning, they could make vital progress for their teaching and learning development, which is pushing them to the next internal level of self-esteem during preparation. Raised questions benefit from pre-service preparation because, after external evaluation, teachers are in the terrain where each classroom or school involves investigative actions to comprehensively understand the situation. Teachers are changing their teaching competences to 'reflective school reformer' in action. They must understand research elements and basic methods such as an observatory, diagnostic, dialogue techniques, inquiry methodology and soft skills. Without that, they are drowning victims in an educational reality. They are wearing wellington boots and try to avoid educational reality problems such as unfunctional teaching methods and forms, strategies, and lack of authority, which is conducting self-esteem partnership over boards of a classroom at the school.

Whereas research is rigorous, we work with an axiom that action research enriches teaching practice more efficiently. Thus, it is recommended to focus on inquiry, results of actions and those impacts on the teaching & learning development. Let us compare Western authors (Greenwood & Levin, 2008) and

Czech interpretation of action research in pre-service preparation. We should be more concerned about open options connected with the main paradigms of this approach. Simultaneously, strict cyclic schemes and movements are beneficial in the traditional research approach in connection with philosophical standards of used methodology with a broader population impact.

Advanced typology of action research persuades the researcher to plan and step in roundabout cycles. However, for pre-service teachers, strategies are more critical to transfer knowledge and practical results through problem-solving situations. In Czech sources, traditional authors (Janík, 2004; Nezvalová, 2002; Walterová, 1995) pointing on a conservatory approach of cycles and achievable results, but we may expect less of that from pre-service preparation at universities. Especially during COVID-19 restrictions, limitations arise. The typical time for tasks, team-work communication and teaching were reduced. The user's technological tools and ID on the cyberspace do not bring in early times expecting values (Kropáč, 2020). Participants have to set rules for how and when they will be realising tasks and pray for the platform's functionality, storages of data and connectivity of each student or teacher. Everyone was struggling and suffering. Indeed, it is the weakness of teaching action research online. That is not due to ideal technical tools, but due to impersonal teaching, human errors and feedback and warm life motivation from lecturer side, which is on cyberspace just only emoji or blank label.

In cyber conditions is missing element critical assuming feedback. Hence, students can react on task or questions but not always answered on the inquiry. Conditions are not suitable for longitudinal solutions of pre-service preparation. Students need to develop their internal self-reflections ability and involve broader implementation of their solving strategies to the external environment. Switching between *in vitro* and *ex vitro* conceptualisation of development students' autonomy must be balanced, and each component of personality have to lead to excellent teaching. Those techniques are part of action research preparation and more comprehensively influence students in cyberspace, albeit as lecturers, that have to skip some procedures or mass inquiry tasks that cannot be realised in a virtual room due to low sound echo in 'cyber hive'.

In the legacy of Lewin's idea of action research (Burnes, 2004), we have to tent to apply for 21<sup>st</sup> Century teachers and their needs as school researchers. That is why traditional methodologists have accepted action research as an assisting tool or uncomplex method with unfinished cycles without objectivity for the whole population. On the other side, action research in pre-service preparation has a dominant role when students accept synergy of planning, communication and publishing their thoughts into creative results and projects. Traditional methodological approach with specific tools in default point on something in

research vacuum but action research is implemented further interpreting daily bread of teachers' mission.

### **Everyone Loves the Chopped-pot**

As we mentioned before, the chopped-pot is a poker term. However, the article is a primary key concept in dealing with complicated situations where students and teachers are separated. There is only a technical tool that helps cross the barrier and makes students' knowledge rise. Chopped-pot is usually a situation when two or more persons split their chips inside a poker game, and everyone is a winner and does not matter if they had a potent combination or not. That is the same in many situations during the teaching process, where the teacher strongly influences students. However, sometimes conditions are not user-friendly for the best results or expected value of a teaching time-investment. Technological transfer, connectivity and sharing in cyberspace brings many useful add-ons, plugins and supporting tools. Indeed, it is necessary to mention that sometimes students have to struggle only with their devices' elementary functions. Many of them had a complicated learning environment due to sharing the same devices in home conditions. Also, not everyone could fully present their individuality in the 'masticated' educational conditions in cyberspace. Mentioned factors are opening rhetorical questions: 'Who is a winner in cyber conditions, and how can the transfer of students' knowledge development progress?'

### **Methodology**

Methodology approaches are mixed (Tashakkori & Teddlie, 2012). We are using two steps verification of validity and reliability in our presented results. Firstly, we analysed an amount of self-reflectional documents created by our students in the actual semester. The central concept is the hypothesis presented below, which is benchmarked by statistical method Cochran's Q Test. Secondly, we analysed data files of worksheets created in cyberspace platforms by our students in the actual semester.

Our research data has been collected during the last semester at Palacký University Olomouc at the Faculty of Education. Research's primary sample has been pre-service teachers. The total amount was 117 full-time students and 178 part-time students-all of the students finishing their master degree in 2 years accredited programmes. Collecting of data started in September 2020 and finished in December 2020. Nominal data as gender or age was not crucial for our research analyse. During monitoring and postproduction of data sets, we need to verify who and how will be using action research in practice after finishing the partial preparation.

## Fundamentals of Research Tools

Firstly, our research's measurement tools were self-reflection technique where students had to complete their vision about themselves. However, it was complicated for them due to an instant reflection of their experience because they were limited by time and task completion. Lately, all of them completed self-reflections have been post-produced by Atlas.ti version 8, and deeply investigated. Secondly, students had to work together on a specific task during cyber lesson. Constructed action research worksheet has one page with instructions and four more preprinted worksheets distributed online where students had to fill their solutions of that task. All of the students from full-time preparation had the same task.

Environment (platform), where it was realised, was a Microsoft Teams. Students did not have any clues on what and with whom they would work. This simulation is very close to daily practice in schools where we cannot predict who will need our help in a short time. The session's maximum length was set up to 45 minutes (approx. equal to one class lesson at school). They were invited to the available virtual room. After five minutes, they had to disconnect and reconnect to prepared channels with limitation maximum of 15 persons per team and could not switch teams during activity. All of their progress was monitored by recording option on this platform, and lecturer was in role as guide. The recording was fully legal according to the internal policy of Palacký University Olomouc and 32016R0679 Regulation (EU) 2016/679. The measure of their activity was possible through video-analyses after a task. We monitored as their team communicate, processing of analyses of calls and inquiries leading to results. It was analysed a portfolio of each group (worksheets) and recorded activity which has approximate 60 minutes per team. We may comprehensively analyse over 660 minutes of pre-service inquiry solving strategies in action research with daily classes students.

The distance pre-service students had similar tasks transformed into a fully comprehensive tool distributed by online form and tried to complete their action research cycle. The tool was 25 steps leading to complementation, including action research methods and ordinary teaching strategies and experience. For each step was limitation maximum of 250 words without time limitation. Constructed tool does not have only open questions but also qualitative measuring questions. We count there, e.g. impact of action research on their actual and future work, understanding of action research and transformation of that knowledge into service situations, adaptation on professional development and in the last instance it was practical usage of results. Action research tool had a leading role as a validity method for *mere conduit* knowledge transfer in difficult cyber conditions.

Traditional realisation Student#1 POW	Pandemic cyber realisation Student#2 POW	Chopped-pot & win-win cyber situation Lecturer POW in cyber conditions
<ul style="list-style-type: none"> <li>•1. Introduction</li> <li>•2. Entry self-reflection assesment</li> <li>•3. Inquiry task method</li> <li>•4. Participatory task method</li> <li>•5. Team worksheets and live feedback from lecturer</li> <li>•6. Assesment of work during action research preparation</li> <li>•7. Ending sefl-reflection</li> </ul>	<ul style="list-style-type: none"> <li>•1. Introduction</li> <li>•2. Entry level self-reflection assesment</li> <li>•3. Team solving worksheets</li> <li>•4. Assesment of team work during action research preparation via video records</li> <li>•5. Ex-ante evaluation</li> <li>•6. Ending comprehensive self-reflection (distance students only)</li> </ul>	<ul style="list-style-type: none"> <li>•1. Lead students to elementary introduction of action research</li> <li>•2. Finish constructed worksheets and deal with non optional cyber conditions</li> <li>•3. Feedback and assesments immediately action or worksheets before they forget</li> <li>•4. Supervise ending comprehensive tool with distance learning students</li> <li>•5. Open mind</li> <li>•6. Teachers' informal language</li> </ul>

Figure 1 Phases of Action Research Preparation

## Findings Quantitative Insight

Based on the conceptual selection of sample data set, the main valuable factor which leads to the identification of application action research to daily practice was based on the critical values where participants selected a rating of importance, length of practice and future usage of this tool. In the first phase of comprehensive postproduction, we focused primarily on data interpretation and objectivity for a detailed understanding of relationships between more experienced pre-service students. We added values of action research approaches as a daily tool for their practice.

All qualitative values are nominals, and these pairwise relationships have been analyses in IMB SPSS Statistica version 25. For instance, we present a critical data set validation procedure thought Cochran’s Q Test table below and hypothesis determination. The statistical hypothesis of dependency is presented as a link to future usage of action research for future practice (e.g. self-reflection, an external tool for cooperation), and connection to the experience of pre-service teachers of distance learning students. A formula interprets pairwise tests testing criterium for a null hypothesis as  $H_0: \pi_a = \pi_b$  and the alternative hypothesis formula  $H_A: \pi_a \neq \pi_b$ .

*Table 1 Cochran's Q Test SPSS Results*

<b>Hypothesis Test Summary</b>				
	<b>Null Hypothesis</b>	<b>Test</b>	<b>Sig.</b>	<b>Decision</b>
<b>SPSS Cochran Q test</b>	The distributions of 0 practice, <5 years of practice, >10 years of practice and >5 years and < 10 years of practice are the same.	Related-Samples Cochran's Q Test	,000	Reject the null hypothesis.
Asymptotic significances are displayed. The significance level is ,05.				

The set hypothesis is defined as:

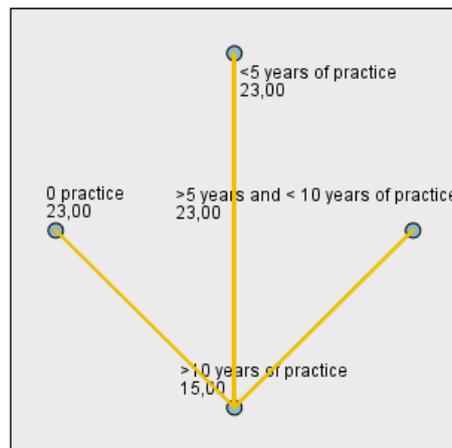
H<sub>0</sub>: 'Between benefit for future usage of action research in cyber preparation and student practice length is not independence.'

H<sub>A</sub>: 'Between benefit for future usage of action research in cyber preparation and student practice length is independence.'

Pairwise entities of collected data define that null hypothesis was declined and alternative one was accepted. Due to traditional Cochran's Q Test's crosstab limitation, we do not know precisely where are mutual nodes between observed pairwise relationships. For better understanding, the McNemar Test in SPSS (Figure 2) with SPSS integrated Bonferroni value adjustment, which crystalises an individual reflection of mutual adoptions between observed pairwise samples. The yellow linear lines coming from nodes are presenting significantly different results in a pairwise comparison.

After the final report and data proceeding, we accepted an alternative hypothesis that leads us to the theory about using an action research tool for future practice. We found a significant interpretation of usage by more skilled pre-service teachers. We led us to objective acceptance of opinion about the necessity of using this tool in schools mainly by teachers with a more extended practice where they may change their stereotypes of teaching habits. The pre-service teachers without practice and sample with practice under to 5 years are open for everything. Pairwise mutual connections in testing combinatory were mainly positive based on responses and compared postproduction. There was no significant ambivalence of potential usage of action research between pairwise of average skilled pre-service teachers.

Pairwise Comparisons



Each node shows the sample number of successes.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
>10 years of practice-0 practice	,348	,087	4,000	,000	,000
>10 years of practice-<5 years of practice	,348	,087	4,000	,000	,000
>10 years of practice->5 years and < 10 years of practice	-,348	,087	-4,000	,000	,000
0 practice-<5 years of practice	,000	,087	,000	1,000	1,000
0 practice->5 years and < 10 years of practice	,000	,087	,000	1,000	1,000
<5 years of practice->5 years and < 10 years of practice	,000	,087	,000	1,000	1,000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is ,05. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 2 Combined Table Sections in McNemar Test

### Qualitative Insight

The second phase of the presented results is mainly connected with a qualitative evaluation of datasets of student’s worksheets. Action research tool tests students’ enhancement for practice. Based on the predictions and findings, not all students’ are fully open to continue in usage daily practice, especially when dealing with unexpected and stressful situations. Problem-solving strategies and team-cooperation point on lack of self-esteem in inquiry and abstract assignment may cause complications between understanding situations, influencing decision-making, and developing rhetorical skills. These imaginative situations are crucial in developing teachers’ mastery. These findings opened a gap in cyber preparation. Students gave less feedback than in traditional lectures. The lecturer

cannot be in each channel, deeply explaining all inquiries, satisfying expectations, and leading students to the best results in action research preparation. Misunderstanding and incapacity of lecturers go hand-in-hand with other problems such as connectivity and dead souls during the team-work because lectures do not have a ‘whip’ on the non-active users working in channels. Thus, we have to mention difficulties wherein groups are no prominent leaders in students’ groups.

The statements presented below are the most interesting from all conversations during the action research task and pointing on the lack of efficacy between the situation and preparation in cyber conditions. The tool is constructed as a task with ‘onion’ structure. If the task is started from the end to the main page of the worksheet, it is the right process. Otherwise, sometimes students lead their decisions from the main page of the worksheet to the other minor worksheets. In conclusion, this dichotomic approach did not significantly impact final results in the action research approach.

Example of inquiry communication in cyber groups during worksheet solving conclusions:

**All students:** *‘What to do now?’*

**Student A:** *‘Do you understand this situation what happens? I am quite lost...’*

**Students B:** *‘We should ask who is responsible for the supervision of teaching at this classroom? What do you think?’*

**Three students:** *‘It is obvious. It is a mistake of management. I do not believe that she must face this situation alone as a graduate teacher with less than one year of practice.’*

**Leader of students’ group:** *‘Ok, but please focus on how we may influence a process and solve this situation. Do you think there is an option to call someone with practice? I mean now a psychologist or someone for external evaluation of teaching...’*

**Student B:** *‘She (teachers’ identity example in the worksheet task) will be under stress. In my situation, I will be focusing on the solutions where I may ask someone what I am doing wrong.’*

**SILENCE 15 SEC**

**MICROPHONES’ ECHOES**

**TIME-BANK BETWEEN FINAL CALL**

**Leader of students:** *‘Is there someone against our decision?’*

**All students:** *‘Recommendation is to ask someone from management or more skilled teachers at the school. If this will not working, call someone for external evaluation such as parents!’*

**Leader of students:** *‘Ok..., I am writing it to a worksheet. Next, please.’*

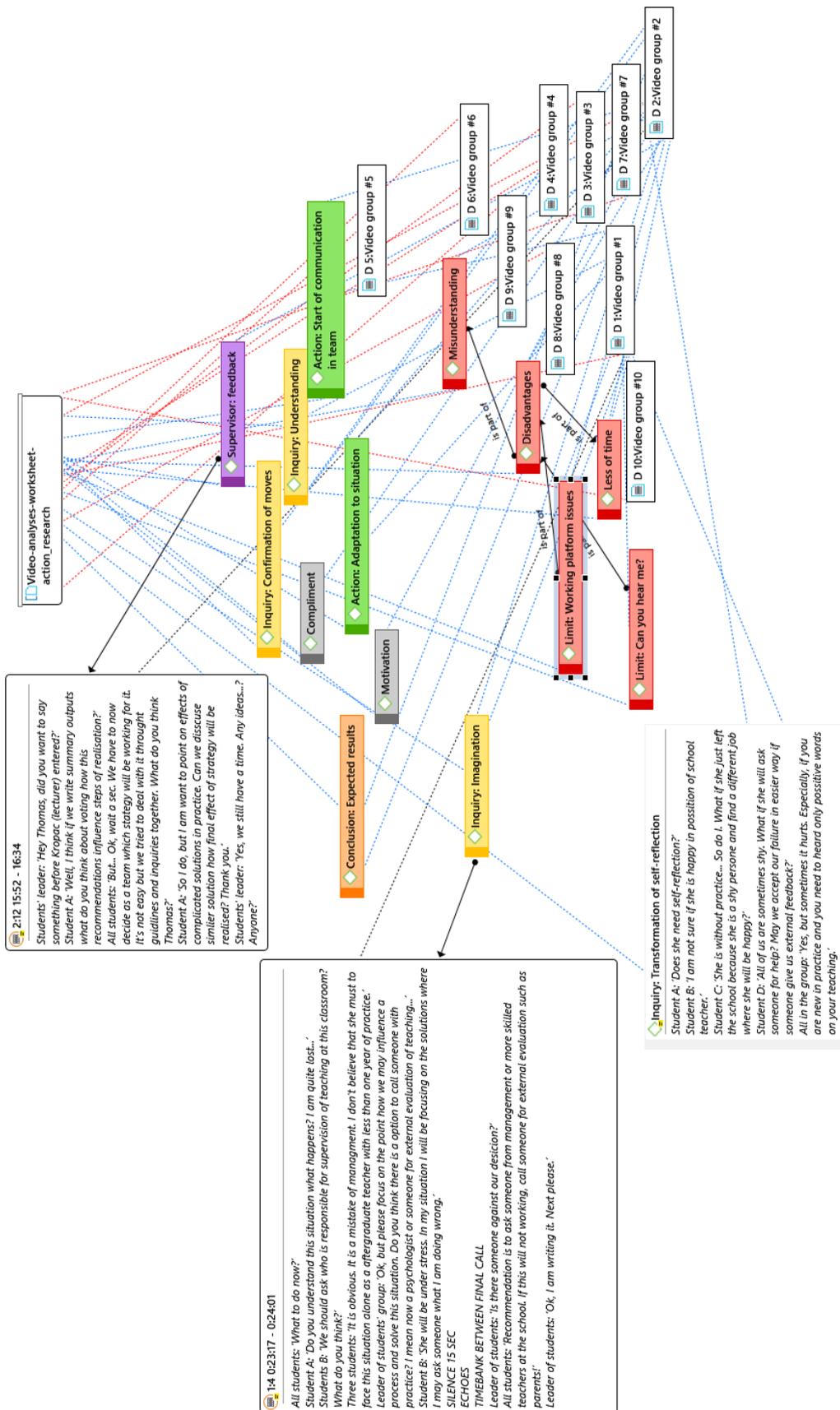


Figure 3 Atlas.ti Video-analyses Nodes

If we highlight final results, there is always a limitation in conditions dealing with lack of connectivity and limitation with shared materials in the platform due to participants' digital literacy skills. The critical disadvantages were inactive students in some groups that were passive during the solutions in some teams. However, the inactive student's percentage was around 11% of all the students, which is approx. 1-2 students per group and that is not so bad as we expected before. Moreover, worksheets push students to focus on the cycle of inquiry moves. Cyber conditions help to develop some changes in pre-service preparation such as a focus on imaginativeness of situation, understanding of the situation, action and transformation of the current situation, adaptation on the community recommendation, pre-service teachers' insight and expected value defined as final expectations of reality, self-reflection of team-work, research development in pre-service simulation, lecturer assessment.

These steps develop students' self-esteem, action research thinking and application of their future usage in school conditions, based on their research interest and skills.

### **Conclusion**

Not everyone is a shoo-in in cyber preparation. Chopped-pot metaphor includes a pre-service student and supervising lectures. These complicated restrictions are not always positively enhancing teachers' motivation to do something new and progressive. The dogmatic ways of teaching are gone. Preparation at the universities has to deal with non-face-to-face teaching and learning options.

Cyberspace opens new trends in the teaching of action research. Lectures may be happy due to more straightforward leadership options in the groups and recording options in students' mass groups, which is added value to the lecturer for continuing feedback and enhancement of students. Otherwise, some of the steps cannot be realised in complicated platforms, and students are lost when they have to finish some longitudinal task without supervision. Especially, full-time pre-service teachers without experience are too dependent on lecturer feedback. Working strategy and recommendations influence how to inquire for better solving of action research worksheets. That is open an insecure situation for pre-service students. Students face complicated theoretical approaches alone in a specific abstract situation and cannot immediately ask the lecturer/colleague.

For instance, learning preparation is significant if teachers are open for new-coming approaches avoiding school stereotypes, enhancing and developing a teacher's practice. Henceforth, developing teaching skills is a very long process where action research may stimulate some traditional teaching habits and

motivate pre-service teachers to work on their natural development by a progressive method, which action research should be.

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