**Research Paper**

# Coaching like a new trend in the field of teaching mathematics

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**ABSTRACT:** *In this paper, we present a new learning method, coaching, through which both the lecturer and the student successfully completed the activities that were a prerequisite for achieving the goal. The learning method was supported by different tools (Grow model, Trello and Flow model). We present the results and lessons learned from the introduction of coaching in the process of teaching mathematics. The research is based on the application of theory, which is summarized from Slovenian and foreign literature, sources and empirical research using statistical methods. In terms of time period, the study is retrospective, as it looks at past influences or situations. Based on the above, it can be concluded that the topic is global and relevant, and its results will enable lecturers to understand the positive meaning and impact of the introduction of coaching in the field of mathematics education. The results of the research will enable institutions to learn about a new type of method that will serve to bring coaching activities closer to the teaching process.*
**KEYWORDS:** *Coaching, Lecturer, Student, Mathematics teaching process, New teaching method*

## I. INTRODUCTION

In this paper, we focus on an innovation, coaching, which we have implemented in the process of teaching mathematics in order to adapt more effectively and efficiently to changes, as we have noticed that students are less and less motivated to complete tasks in the time available to them. Based on what we have written, we have tried to answer the fundamental research question: do the lecturer and the student make significant progress towards the goal through coaching?

The result of our research is the publication of a process concept (comparison of the per-centage of tasks completed by students who have been involved in a coaching process and students who have not been involved in such a process).

## II. GENERAL DEFINITION OF COACHING

Coaching in the world of business and sport dates back several decades. Its founder is W. Timothy Gallwey [1]. He wrote the book The Inner Game of Tennis. The content of the book is about the coach asking open questions to the tennis players. The coach did not correct their mistakes. The players corrected themselves. It has been shown that players' performance decreases when they listen to coaches' advice. But when players were more relaxed and had a sense of the desired result in their heads, they were more successful. The main message of the book is that in order to master a particular skill, it is necessary to pay attention to the "inner game" that is going on in the head [2].

Definitions of coaching through the ages

Coaching is about getting someone from where they are to where they want to be [3]. The International Coach Federation [4] defines coaching as a simple but effective form of personal development in which the coach and the coached create a trusting relationship that sustains and prioritizes the coached personal growth and competence development.

An important way in which the coaching method differs from other methods of conversation that help individuals to grow is that the coach helps the individual to find the right path for him/herself in the process. He or she does not advise which is best, but comes to this realisation on his or her own [5].

The coaching method in education, in the pedagogical process, is undetectable. Therefore, in this paper we address a problem that has not yet been addressed in the available literature. We have not found any information that research has been carried out in Slovenia on the integration of coaching in the teaching of mathematics, nor has any research been carried out on the impact of coaching tools on students' performance in mathematics assignments.

Differences between coaching, counselling, mentoring, talking, interviewing and advisory work in school

It often happens that the role of coach is confused with that of speaker, counsellor, psychologist, etc. As there are fundamental differences in the approaches of these methods [6], we will describe them.

Advice

Counselling is characterized by the counsellor's expertise in solving individual or group problems. The counsellor addresses problems at the level of the whole group, not at the level of the individual [7, 8]. The counsellor passes on his/her expertise to individuals or groups. We are talking here about one-way communication, which individuals have to accept, if they want to perform their tasks with quality and value [8].

Mentoring

Brockbank and McGill [9] (pp. 63-64) argue that mentoring is a relationship between the mentor and the mentee and individuals, with the aim of helping them learn new skills. Crane [10] (p. 37) explains that mentoring is a process in which mentors pass on their experience to individuals. It is mostly carried out according to a pre-defined program to clarify interpersonal relationships within the group. In the Slovene Dictionary of the Literary Slovenian Language - SSKJ [11], mentoring means guiding a young, inexperienced person with advice and explanations.

Talk

The Conversation Method is a dialogue method between teachers and students, and between students themselves. The communication between the subjects is two-way, which means that both the teacher and the student are directly verbally active. Communication must also be balanced, which is reflected in the frequency of students' participation in speech and in the teacher's encouragement and respect for this participation [12]. This method is appropriate when the participants have a background in the subject, are close to it and are interested in it. In addition to the speaker, the audience should be well prepared for such a conversation. However, the method is not suitable for dealing with completely unfamiliar, difficult-to-understand content [12].

Interview

In didactics, various Slovenian authors [12 - 14], use the term interview method. In more recent literature, this term has been replaced by classroom talk, which refers to a conversation between teacher and pupil that takes place in school. This clearly defines the term conversation as a conversation between teacher and pupil in the classroom.

Advisory work

Counselling work is carried out by counsellors, who are psychologists, pedagogues, social workers, social pedagogues and defectologists. The purpose of advisory work is to assist, advise and collaborate in the educational process with the aim of maximizing the success of pupils, teachers, parents and the institution as a whole in achieving general and specific educational goals [15].

## III.   NEW DEVELOPMENTS AND BENEFITS OF INTRODUCING COACHING IN EDUCATION

The immediate novelty of the introduction of coaching is that it works on a person's consciousness and helps the individual to find the right path for him/herself. This is how the coaching method is distinguished from all other methods of conversation. Various authors [16 - 18] cite a wide range of benefits for all participants. The common benefit is that the introduction of coaching helps both individuals and groups to develop new behaviors that will lead them to new results and to the goal they have set for themselves, with the help of the tools included.

Benefits of introducing coaching in teaching abroad

Coaching became established in the field of education in the USA and in some parts of Europe (most notably in the UK), and later in Australia.

Devine, Meyers and Houssemand [19] agree in their paper that a major reform of education is needed to meet the challenges of the 21st century. In their contribution, they present an overview of the research that has already been done and the approaches that have already been used. A systematic literature search was conducted using the words "coaching" and "education". Based on the collected literature, articles and reports, it was confirmed that coaching is a powerful method that can be useful for: i) supporting education, ii) student development, iii) teacher development, iv) leadership development and, consequently, v) the development of the institutions themselves. They state that all of these coaching approaches make a valuable contribution to all of these benefits. They end up realizing that there is no benefit if coaching remains at an individual level. It is therefore crucial to do everything possible to develop coaching both individually and collectively.

From the aforementioned paper [19], we highlight research based on the approach we have chosen and implemented. It takes a goal-oriented, action-oriented approach, underpinned by the GROW model (more on GROW below). This approach is advocated by the whole education system in the UK, alongside Oakland [20]. In the Oakland School District, they found that the Academic Performance Index increased by an average of 74 points per year after the introduction of coaching in the education process. 78% of students successfully completed their requirements. Based on the research conducted, the Oakland County School District is aware of the need to introduce a coaching process at all three levels: among lecturers, among students and among school leaders.

We have tracked down a paper based on a review and analysis of the literature highlighting the similarities and differences between coaching and mentoring. They also looked at how practice is benefiting from the introduction of coaching and mentoring into the education system in Singapore. Finally, they demonstrated the different approaches that have been implemented so far, both in the field of coaching and in the field of mentoring, for different levels of education. Among these approaches, the GROW approach also stands out. The paper shows that coaching is being implemented in a number of areas of professional development for teaching staff in Singapore. This includes coaching: (i) trainee teachers, (ii) novice teachers and (iii) heads of institutions. However, as the paper is based on a review and analysis of the literature, further empirical research on the integration of coaching into the education system in Singapore is recommended. In particular, they recommend research on (i) the impact of coaching on education in different contexts, (ii) the experiences of coaching participants, (iii) the adequate number of coaches to meet the demand for coaching in institutions, and (iv) the formalization of the coaching system, with a view to exploring the promotion of innovation in education. The author of the paper also urges all educators to adopt a new teaching method that will make their process innovative and all participants will gain skills in reflective thinking [21].

Lofthouse [22] notes that coaching has been developing as a form of professional development for teachers and school leaders in the UK for several decades. He used a focus group approach to interview six coaches in England. They presented their approaches and articulated the value of their practices. During the debates, similarities emerged about the nature of their work and their thoughts on coaching. The study shows that the coaching process is about (i) the relationships of all participants, (ii) communication, (iii) supportive tools and (iv) models. All participants had in common that they used the GROW model to introduce coaching, which is the most important coaching support tool. Lofthouse [22] also states that coaching is one of the valuable methods that should serve as a support to the education system.

Benefits of introducing coaching in teaching in Slovenia

The usefulness of coaching has been piloted in Slovenian primary and secondary education for the last two years. It has been tested in international examples, in the form of team and peer coaching, as well as individual coaching, the latter provided by an external coach for both principals and teachers [23]. The results of the pilot project, which involved 17 secondary schools and 2 primary schools, show that the introduction of coaching in education has had a positive impact on all those involved in the process. Participants also suggested that it would be useful to extend the introduction of coaching to the whole teaching team [23].

The author of this paper has conducted a preliminary quantitative survey to check whether the teaching staff in Slovenia is ready to introduce new teaching methods into the teaching process. The data was collected over a period of 5 months (June - October 2021). 637 teaching staff took part in the survey, 76% of them women and 33% men. 72% of the respondents were university lecturers, 6% were employed in a secondary school, 20% in a primary school and 2% were employed in private institutions. The survey provided useful information related to: i) activities in the teaching process, ii) self-assessment of the emotional state in the teaching process, iii) healthy/strong authority, iv) introduction of innovations in the teaching process and v) self-assessment of a) the level of activity of the learners in the teaching process, b) the level of positive attitude/motivation of the learners in the teaching process, c) the level of the respondent's authority, on a scale from 1 to 5. Here we highlight the variables whose results should cause alarm in Slovenian education. In response to the statement (Q5f - I am proud to be a teacher/lecturer), only 56% of respondents are proud to be a teacher/lecturer. For the statement (Q5c - I am happy to motivate students if their motivation drops), only 28% of respondents answered that they are happy to do so. In response to the statement (Q3b - I formatively follow up with students), only 16% of respondents answered that they do this regularly. This means that only 16% of respondents check with their audience whether they have understood what they have been told. Let us also highlight this statement (Q2e - I ask questions during the teaching process to encourage the audience to participate), to which again only 53% of the respondents answered that they actually do so. The next question (Q13) asked respondents, if they were willing to introduce a new teaching method into their teaching process. 87% of respondents said they were ready to introduce it. The same percentage of respondents are also willing to undertake further training (Q14), in order to gain a healthy/strong authority and, as a result, listeners would be more motivated and would successfully complete more activities than they have done so far. 98% of the respondents dare to implement innovative ideas (Q15), so based on the preliminary survey, we can say that the introduction of coaching, which we have introduced in our school, is an excellent opportunity to improve the teaching process in mathematics as well as in all other subjects.

## IV. WHY INTRODUCE COACHING IN EDUCATION?

The lecturer is a key factor in the teaching process, influencing and being responsible for the student's success (a fact that only 25% of the respondents in the preliminary survey discussed in the previous chapter were aware of). The sooner the lecturer accepts this, the sooner the transformation from a lecturer with a title to a lecturer with a soul. If the lecturer accepts the innovation, so will the students. Innovation can only be achieved through movement, and the process of teaching mathematics is a movement that leads the lecturer, as well as the student, to the desired goal.

Our idea was to integrate coaching into the process of teaching mathematics, with the aim of making significant progress towards the goal of the lecturer and the student. Coaching would help the student to keep track of progress and give them the opportunity to learn something new. A lecturer who would implement coaching in his/her teaching process would thus enhance education. The idea was realized. Coaching has been integrated into the teaching process in the mathematics subject at tertiary level. The tool that was the basis for the integration of coaching into the mathematics teaching process is presented below.

## V. MATERIALS AND METHODS

The theoretical part of the paper is based on the use of various qualitative methods (the theory is summarized from Slovenian and foreign literature and sources) and the empirical part on the use of quantitative methods. Exploring our problem throughout the paper requires a compatible complementarity of descriptive and analytical approaches to research. Statistical methods were the key foundation of the research, and were used to collect and analyze the data. It should be pointed out that the planned and the carried out research are in line with each other. This tells us that the initial acquisition of theoretical background provided the substantive basis for the design of the introduction of coaching in the field of mathematics education. The empirical research involved: i) collecting data from a defined sample; and ii) analyzing the data. The study was based on measurements over a fixed time interval and was a cross-sectional study. It was also based on an elaborate measurement instrument, which means that the data collection and processing methods guided the research.

In order to integrate the new learning coaching method into the mathematics teaching process, we focused on the following tool: the reworked GROW model.

**The GROW model as a tool for the proposed earning method in the coaching process**

The new learning method was supported by the GROW model, which is a basic communication tool both abroad and in our research. It can be used in a real classroom as well as in a virtual classroom. We introduced coaching into the process of teaching mathematics because we anticipated that students would complete more tasks in the time available to them using this method. We also assumed that their knowledge

would be adequate, and that they would be sufficiently motivated and challenged by the tasks to push them forward, to get them enthusiastic. We also know that we cannot achieve our goal without intermediate control, discipline and perseverance. And the GROW model pushes us to keep going, to keep going to the finish line. This will increase the percentage of people (currently 10%) who achieve something truly original in their lives [24] (p. 267).

A survey on the importance of asking questions was conducted at the University of Primorska in 2019. 252 students took part. The research focused on the role and importance of questioning in the higher education learning environment. In particular, they were interested in the answers to the questions on how students perceive the lecturer's questions in lectures and tutorials, what questions (types and frequency) they think and experience lecturers ask, how students respond to them and what are the reasons for certain responses. The survey results show that students are well aware of the importance of questions in the education process. They expressed positive views on learning environments in which different questions are asked and on lecturers who often ask questions. At the same time, they were critical of the way questions were asked, especially if they were not situated in a learning space that allowed for positive interaction between students and lecturer and encouraged student responsiveness [25]. This research is an excellent quantitative verification of our tool, which we describe below.

The GROW model, developed by John Whitmore in the 1980s, is the simplest way of capturing the essence of the learning method of coaching. It is considered the core model of coaching. It consists of four elements [26]: (i) setting goals, (ii) defining the reality of the situation, (iii) identifying opportunities for progress towards the goals, and (iv) the desire and willingness to do whatever it takes to achieve the goals.

In our study, the GROW model allowed the lecturer to check:

1. the individual student's agreement to the activities during the process,

2. understanding the current situation

3. getting involved in finding opportunities and

4. an overview of which activities the student has already undertaken [27] (p. 46).

In the following, we present the performance of the GROW model (in our study), which is illustrated in Figure 1.
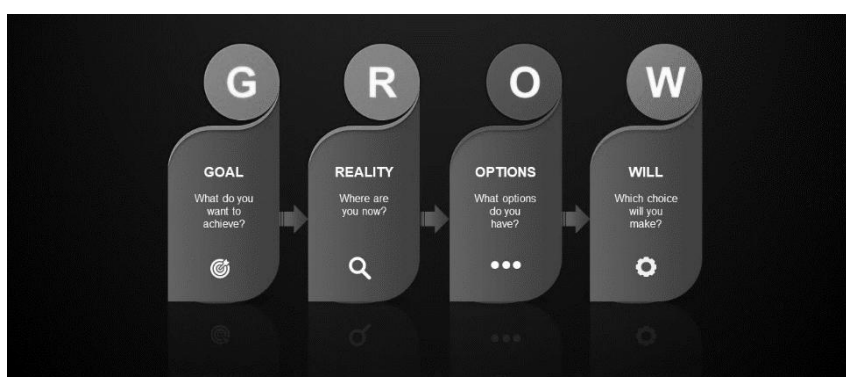


Figure 1: An overview of how GROW works
Source: web

Goal setting (G - GOAL)
The teacher invited each student to participate in the designing of the activities that were a prerequisite for achieving the goal. Together, they agreed that the activities would consist of: a project assignment, participation in a forum, the production of a dictionary, analysis and evaluation, and a written exam. All activities together accounted for 100% of the final grade, 60% of which was the written exam.

Examining the current situation (R - REALITY)
The second step in the GROW model was to examine the current state of students' knowledge of the subject area. In defining the current situation, the lecturer used open-ended questions such as: ″What do you already know about this field? ″, ″Why did you decide to do this study? ″, ″When do you intend to start the activities to help you reach your goal? ″, ″Where are you now in relation to the goal we have set together? ″ and most importantly: ″How can I help you? ″ [27] (p. 47). In this phase, it was important that the lecturer was able to deliver the material while actively listening to the students, and that she was able to ask the student an effective question at the right moment, in order to allow the student to make his own judgement about the current situation. In this phase, the students carried out activities in the forum.

(O – OPTIONS)
In the third step, the lecturer presented additional material that served as an option to achieve the goal. She also invited students to suggest which type of material they prefer (books, articles, web, etc.). The lecturer actively listened, analyzed and summarized what was said [27] (p. 47). In this phase, students created a dictionary and participated in the analysis and evaluation of the mathematical problem presented. Students were forced to think about the goal and the possibilities to achieve it. In this step, the student and the lecturer work together to find ways to achieve the goal.

Completion and Will (W - WRAP UP)
The last step is the completion of the coaching process. This means that in this step, the student has chosen the path to follow in order to achieve his/her goal. Their task was to prepare a project assignment and a written exam. At this stage it was essential that the student's choice of path was correct, as this would determine whether they reached their goal [28] (p. 27). The role of the lecturer at this stage was very important, as she checked which path the students had chosen and motivated the students to follow the goal and not to give up on the way to the goal by choosing the right questions.

In summary, the GROW model provides a simple sequence of steps that can be followed by both the lecturer and the student. It is based on 4 stages. With the help of the model, the lecturer who is the coach tries to lead the student to the goal, to enthusiasm. But the student is aware of and can assess where he or she is at a particular stage and time. They receive appropriate guidance from the lecturer, as well as praise and encouragement.

Asking questions using a modified GROW model

Table 1 lists the questions used by our lecturer, the coach, in the teaching process of the mathematics course, period: 2019/2020 and 2020/2021.

**Table 1:** Questions asked, separated by the different stages of the revised GROW model

| 1. PHASE: SETTING OBJECTIVES |
|---|
| Professor/coach: Key question: what is the goal of this course?<br>Learner: Answer.<br>Other important questions: what do you want to achieve (in the short and long term)? What result are you trying to achieve?; Do you know by when you want to reach your target for this subject?; Can the target be achieved within the timeframe?; Which three actions might make sense this week?; Is the target measurable?; What would be the benefits of achieving this goal?<br>Learner: Answer. |
| 2. PHASE: DEFINING THE REALITY |
| Professor/coach: key question: what is happening now (what, who, when and how often)? What is the effect or result of this?<br>Learner: Answer.<br>Other important questions: Have you taken any steps towards your goal?; How would you describe what you did?; Where are you now in relation to your goal?; On a scale of 1 to 10, where are you?; What has contributed to your success so far?; What progress have you made so far?; What's working well at the moment?; Do you still |

know what is required of you?; Why haven't you achieved this goal yet?; What do you think is holding you back?; Do you know other people who have achieved this goal?; What have you tried to achieve your goal in the course?; What could we do better now to achieve it?; On a scale of 1 to 10, how serious/urgent is the situation?
Learner: Answer.

| 3. PHASE: IDENTIFYING OPPORTUNITIES FOR PROGRESS TOWARDS THE OBJECTIVES |
|---|

Professor/coach: key question: what can you do?
Learner: Answer.
Other important questions: what do you think you should do first?; What could be your next step?; What do you think you need to do to get a better result (or to get closer to your goal)?; What more could we do?; How can I help?; What would have happened if we had done nothing?; What have you already managed? How could we do more than that?; What is the most difficult/challenging part of getting to your destination?; What is the best/worst thing about this option?; How have you dealt with this/similar situation?; What could I have done differently?; If there was anything you could do, what would you do?; Which three actions might make sense this week?; How can I help you?
Learner: Answer.

| 4. PHASE: THE DESIRE AND WILLINGNESS TO DO WHATEVER IT TAKES TO ACHIEVE THE GOAL |
|---|

Professor/coach: key question: what are you going to do now?
Learner: Answer.
Other important questions: Tell me how you are going to do this; Is there anything else you can do? On a scale of 1 to 10, what is the probability that your plan will succeed?; What would it take to make it 10?; What barriers do you expect or need planning for?; Which resources can help you?; When will you start the next steps?; How will you know you have been successful?; What support do you need for this?; What do you need from me to make it easier for you?; Which three actions might make sense this week?; On a scale of 1 to 10, how committed/motivated are you?; What would it take to make it 10?
Learner: Answer.

Source: [29] and own

## VI. RESULTS AND DISCUSSION

Results and lessons learned from the empirical research carried out - the introduction of the GROW model

The author of this paper has been teaching mathematics at a higher education institution for 7 years. 5 years of implementing a math's teaching process without coaching. In the last two years, she has decided to introduce a new method of working, coaching, into her mathematics teaching process. In Table 2, we show data on (i) how many students were enrolled in the course in each academic year, (ii) how many students actually attended the course, (iii) how many students completed all the assignments that were a prerequisite for completing all the activities in the course in the given timeframe, and (iv) what was the average percentage of students' success, who have completed their tasks in the time available.

**Table 2:** Number of students and achievement of the target by academic year
from 2014 to 2021

| STUDY YEAR | Coaching integrated into the math's teaching process | Number of students enrolled in the course Fi | Number of students actively involved fi | percentage of students actively participating fi % | number/proportion of students completing all assignments within the time limit fi1 / fi1 % | percentage of the average of all tasks performed |
|---|---|---|---|---|---|---|
| 2014/2015 | NO | 15 | 11 | 73,33 | 9 / 81,82 | 74 |
| 2015/2016 | NO | 33 | 24 | 72,73 | 18 / 75,00 | 73 |
| 2016/2017 | NO | 25 | 14 | 56,00 | 11 / 78,57 | 72 |
| 2017/2018 | NO | 22 | 17 | 77,27 | 15 / 88,24 | 73 |
| 2018/2019 | NO | 35 | 27 | 77,14 | 24 / 88,89 | 74 |
| AVERAGE | | | | 71,29 | | 73,20 |
| 2019/2020 | YES | 21 | 19 | 90,48 | 19 / 100,00 | 83 |
| 2020/2021 | YES | 39 | 31 | 79,49 | 31 / 100,00 | 83 |
| AVERAGE | | | | 84,99 | | 83,00 |
| TOTAL | | 190 | 143 | | | |

Source: own

Table 2 shows that the survey was carried out on a sample of 190 students, of which on average 70.52% were actively involved in the process of mathematics teaching. 93 students were actively involved in the process of teaching mathematics without the coaching method. We have covered a period of 5 years. On average 71.29% of students were active in all the years covered by the survey. In the teaching process where coaching was not involved, it did not happen, based on our sample, that all students who actively participated in the teaching process successfully completed all the tasks in the time available. The highest pass rate was 88.89% in the 2018/2019 academic year. We also measured the average grade or percentage of the assignments students achieved. The average percentage of all tasks completed was therefore 73.20%. This represents an average score (8).

For the last two academic years, the mathematics teacher and the mathematics subject teacher have decided to integrate the teaching method of coaching into the mathematics teaching process. 50 students were actively involved in this process. On average, 84. 99% of the students were active in both years of the mathematics coaching process. In this teaching process, based on our sample of two years, we see that all students who actively participated successfully completed all tasks in the time available. This was a confirmation that the lecturer, the coach, had made the right decision to introduce a new method in the process of teaching mathematics. Here we also measured the average grade or percentage of students who completed the assignments. The average percentage of all tasks completed was 83. 00%. This represents an average score (9) and is just under 10% higher than the percentage where we did not include the coaching method. We would also like to point out here that the process of teaching mathematics in this subject until the academic year 2020/2021 has been carried out from the very beginning, both remotely and face-to-face. So the situation (COVID-19) we find ourselves in in 2020 has not affected the process of teaching mathematics. It only affected the final examination (theoretical knowledge assessment), which in 2020/2021 was conducted remotely via the Sava Exam Browser web tool .

Given that our sample is small, we can choose the t-test statistic or student's t-distribution to confirm the hypothesis H1. With 95% confidence, or a 5% risk level, we can say that between 74% and 93% of students in the general population who will be involved in future mathematics coaching will pass all tasks.

FORMULA AND RELEVANT DATA:

$n = 50$; $p = 0,83$; α = 5%, $z^{\alpha/2} = \pm 1,96$

$$P\left(p - z_{\frac{\alpha}{2}} \cdot \sqrt[2]{\frac{p \cdot (1-p)}{n}} < \pi < p + z_{\frac{\alpha}{2}} \cdot \sqrt[2]{\frac{p \cdot (1-p)}{n}}\right) = 1 - \alpha$$

$$P\left(0{,}83 - 1{,}96 \cdot \sqrt[2]{\frac{0{,}83 \cdot (1 - 0{,}83)}{50}} < \pi < 0{,}83 + 1{,}96 \cdot \sqrt[2]{\frac{0{,}83 \cdot (1 - 0{,}83)}{50}}\right) = 0{,}95$$

$$P(0{,}736 < \pi < 0{,}934) = 0{,}95$$

Based on the results of the quantitative analysis, we confirm the hypothesis H1: The number of students who achieve the goal and receive coaching in the process of mathematics teaching is higher than the number of students who are not involved in such a process.

We should also mention here that a lecturer can check the level of his/her authority by checking the percentage of assignments completed by active students in a given period of time. If this percentage is higher than 80% then the lecturer has a strong and healthy authority, if the percentage is between 50% and 80% then the lecturer has a good authority, and if the percentage of completed assignments is below 50% then the lecturer's authority is weak [24] (p. 107). The average percentage of assignments completed when the lecturer introduced the coaching method into the mathematics teaching process was 83% on average in both years, which means that this teaching method is also effective in increasing the lecturer's authority level.

## VII.     CONCLUSIONS

Every lecturer (not only in mathematics) could: (i) be knowledgeable and professional enough, (ii) be emotionally intelligent enough, (iii) use common sense, (iv) have passion and energy for the work they do, (v) be disciplined, (vi) assess students' knowledge both theoretically, practically and relationally, (vii) have courage in decision-making, and (viii) be proud of themselves first and foremost and also of their students.

The benefits for students who have participated in a mathematics teaching process involving coaching are mainly: (i) encouragement to work on the work in progress, (ii) tracking of their own progress, (iii) quick detection of possible problems, (iv) faster progress on the work, and (v) feedback from the professor, the coach.

Based on our research, we have confirmed hypothesis H1. At the beginning of the empirical research, we defined the main thesis and asked the key research question: do the lecturer and the student make significant progress towards their goals through coaching? We empirically tested this thesis and found that the lecturer and the student make significant progress towards the goal through the introduction of coaching. And by confirming the research hypothesis, we are also confirming the fundamental thesis of the research.

If a lecturer happens to be unsuccessful in his teaching process, let him be guided by the thought of Albert Einstein, who said "It is sheer folly to do things in the same way and expect a different result". So common sense must be applied. Not to worry about this, it is necessary to find a new way of approaching how to keep our authenticity in leading through the process of teaching mathematics. A new approach we have been exploring is coaching. By introducing a new method of coaching into the teaching of mathematics, students will achieve their goal to a greater extent than without it. The coaching approach develops everyone involved - lecturers and students alike. Students are the image of the lecturer. If the number of tasks completed is low, knowledge transfer is also poor. If the number of completed tasks is high, the teaching method is excellent. Based on the research we have presented, we can confirm that the introduction of coaching is a method that produces measurable results and is recommended, if not almost necessary, in the process of teaching mathematics.

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